

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS.

By TOM IREDALE.

(Plates xxxiii.-xxxvi.)

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Roy Bell has made several collections of molluses which I hope to report upon more fully in the near future, especially in connection with zoogeographical problems relating to Australasia. Roy Bell was born on Raoul Island, in the Kermadee Group, and was of the greatest assistance to all the members of the Expedition of 1908, but more especially to myself, as I found he had an excellent knowledge of the larger shells and was keenly interested in this group. After I left the island, he made still larger collections, which were partly reported upon by Mr. W. R. B. Oliver, now at the Dominion Museum, Wellington, one of our party. Owing to an unexpected disaster which compelled all the settlers (the Bell family) to leave the island, I was able to obtain his services for Mr. G. M. Mathews, to investigate the bird life of Norfolk and Lord Howe Islands. While upon these islands he made large collections of molluses for me. until the Great War suspended all scientific work and publication. Bell volunteered, though not sound, and served four years, and upon his demobilisation made more collections in Australia. He landed at Melbourne and went to Port Fairy, Victoria, where he studied the Adelaidean fauna; he then travelled to Mallacoota, Victoria, where he found almost a pure Peronian Molluse Fauna. This was all I had desired for comparison, but the influenza outbreak prohibiting his return to New Zealand, he travelled to Eden in Twofold Bay and stopped there until the epidemic was over. He employed himself in making a thorough survey of the molluscan fauna, shore collecting in every available place, dredging throughout the Bay in from five to twenty-five fathoms, and outside, as far north as Merimbula, in water to the same depth, and in deeper water, from fifty to seventy fathoms, off Green Cape. In this essay I deal with the Twofold Bay collections, but use the other material for comparison. As all the material has been collected by one man, employing the same methods, the results are especially valuable in this respect, the personal equation, no small factor, being eliminated. Angas recorded shells, received from Brazier, from Twofold Bay. while apparently Cox and Hedley also collected there, but I have seen no note of Disaster Bay, the sonthernmost limit of New South Wales, which Bell visited. The littoral fauna was found to be stationary, little trace being found at a depth of only five fathoms, while from five to twenty fathoms, the mollusean life was uniform; but beyond twenty fathoms a new fauna was developing, and from the deeper water, 50-70 fathoms, still more different forms were secured, but. as usual, much of the deeper water material was dead. Again, the shells washed up on the beach vary according to the seasons, many being found during winter gales which are not met with in summer; and these also are rarely dredged. Thus, to investigate completely a faunal area, the seasons must be also considered as well as much dredging and shore collecting. Probably a year's collecting by a company of workers would show three-quarters of the fauna in a restricted area.

Hedley proposed a subdivision of the Australian coastline, as regards the marine fauna, into four regions; these have been generally accepted by scientific investigators, but seem to have been misunderstood by some who were ignorant of the facts. The present collections were made for the purpose of enlarging our knowledge of the regions, especially by means of the Loricate fauna, as I had found these indicated the general results very fairly. I had made collections at Port Curtis and at Caloundra, Queensland, and have recently collected continuously on the Sydney beaches, while I have paid a visit to Port Fairy, Victoria.

Hedley's Regions are as follows: the Solanderian covered the coastline of Eastern Australia from Cape York to Moreton Bay; the Dampierian Region ran westward from Cape York to Shark's Bay, Western Australia; the Adelaidean Region extended along the south and south-west coasts of Australia from Wilson's Promontory, in Victoria, to Shark's Bay, and included the north and west coasts of Tasmania; the Peronian Region took in the rest of the east coast of Australia and Tasmania, and the east coast of Victoria. The only emendations yet proposed have been the separation of the eastern coast of Tasmania under the name Maugean, and the acceptance of the Solanderian as inclusive of the Dampierian. I have continually compared Peronian shells with the (same) species from southern Tasmania, and commonly find them to differ to a greater or less degree. At the point of inosculation of Regions, species of the two Regions will commonly be met with, but the further away from this point the purer the collection. Thus, to emphasise this point, Sydney should show almost a pure Peronian fauna, while Adelaide would show just as pure an Adelaidean fauna, but collections made at Twofold Bay or Western Port might show an appreciable Adelaidean or Peronian element respectively. At Twofold Bay no Solanderian forms would be expected, and these hypotheses have been absolutely confirmed by facts. We can now with certitude generally designate the littoral marine mollusca with their Regional names. It must be remembered that we are dealing with the littoral fauna, and that the deepwater fauna does not obey these laws so exactly, but curiously enough, even this fauna shows distinction in the same manner. With regard to the exact relationship of these deepwater forms and also the fossils, I have published a note (Proc. Malac. Soc., xv., 1922, pp. 37-8) indicating a solution of the nomination of these related forms. A paper by Chapman and Gabriel (Proc. Roy. Soc. Vict., xxxvi., n.s., 1923) has just been received, in which they record their belief that the recent and fossil forms must be compared and contrasted, and then describe some new species, and record other fossils under living names. They do not appear to have considered my note as simplifying their troubles. They have described a new species Cellana cudmorei as differing from C. variegata in a few details. C. variegata is the common Sydney limpet, which varies according to station and locality, and their species could be matched in any series procured at any place. I regard their form with exactly the same views as they have expressed, but my method of nomination obviates any criticism. I will give details of my scheme under the first species that lends itself to such treatment, rather than in this introduction. These notes are critical of the nomination and status of New South Wales marine molluses, and are revisional of the names utilised by Hedley in his Check List

published in 1918. The whole of this work is based upon Hedley's foundation, and should be regarded as ornamental rather than as destructive. In the same way as the stonemason improves the face of the laid stone, I have amended Hedley's List: the stone itself is not altered, only beautified, and without the stone to work upon the stonemason could not work. I have made much use of Pritchard and Gatliff's Victorian List, with its continuation by Gatliff and Gabriel, Tate and May's List of Tasmanian molluscs with May's additions, and more recently May's Check List and Illustrated Index of Tasmanian shells, and Sir Joseph Verco's numerous and invaluable papers on South Australian Mollusca. As all these essays have appeared in circumscribed and well known Australian scientific journals, I am not giving complete references save in necessary cases. This will save very much space and will not cause much inconvenience to the interested worker. It should be stated here that the collection reported upon was studied at the British Museum (Natural History) in conjunction with the use of Sherborn's MSS., and has been reviewed by means of the collection in the Australian Museum, so that both sides of each matter at variance have been viewed. The collection will be placed in the Australian Museum for future reference, and it should be emphasised that the thanks of the scientific world are due to Mr. Charles Hedley, who has assisted me in every possible way in this revision of his own life-work. We are agreed that it will be many years before such drastic treatment can be again served out to the marine molluscs of this State.

To save space the following notes have been condensed to a minimum, only the bare facts being recorded, so that it may not be realised that many of these notes represent months of research and have not been hastily produced. Twice as many notes have been withheld for further consideration in connection with fieldwork, and the multitude of new generic names here introduced is through comparison, with the assistance of the leading British malacologists, of these Austral forms with the Palaearctic types.

I have proposed as new:---Nucula praetenta, nom. nov., for Nucula umbonata Smith. Nuculana (dohrnii) tragulata nov. Comitileda, gen. nov., for Leda miliacea Hedley. Poroleda pertubata, nom. nov., for Poroleda lanceolata Hedley. Propeleda, gen. nov., for Leda ensicula Angas. Glycymeris striatularis suspectus, subsp. nov. Neotrigonia gemma, sp. nov. Notolimea, gen. nov., for Lima australis Smith. Lima nimbifer, sp. nov. Trichomusculus, gen. nov., for Lithodomus barbatus Reeve. Fluviolanatus, gen. nov., for Modiolarca subtorta Dunker. Modiolus delinificus, nom. nov., for M. albicostus auct. Amygdalum beddomei, nom. nov., for Modiolus arborescens auct. Solamen rex, gen. et sp. nov. Eximiothracia, gen. nov., for Thracia speciosa Angas. Thraciopsis peroniana, nom. nov., for T. elegantula auct. Thracidora, gen. nov., for Thraciopsis arenosa Hedley. Myadora royana, sp. nov. Myadora complexa, sp. nov. Eucrassatella, gen. nov., for Crassatella kingicola Lamarck. Talabrica, gen. nov., for Crassatella aurora A. Adams and Angas.

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Salaputium, gen. nov., for Crassatella fulvida Angas. Bathycardita, gen. nov., for Cardita raouli Angas. Mendicula memorata, gen. and nom. nov., for Lucina induta Hedley. Notomyrtea, gen. nov., for Myrtaea botanica Hedley. Numella, gen. nov., for Diplodonta adamsi Angas. Melliteryx, gen. nov., for Erycina acupuncta Hedley. Borniola, gen. nov., for Bornia lepida Hedley. Pratulum, gen. nov., for Cardium thetidis Hedley. Gouldiopa, gen. nov., for Gouldia australis Angas. Fluctiger royanus, gen. et sp. nov. Notocallista, gen. nov., for Cytherea kingii Gray. Chioneryx, gen. nov., for Venus striatissima Sowerby. Eumarcia, gen. nov., for Venus fumigata Sowerby. Tellina beryllina, nom. nov., for Tellina inaequivalvis Sowerby. Semelangulus, gen. nev., for Tellina tenuilirata Sowerby. Abranda, gen. nov., for A. rex, nom. nov., for Tellina elliptica Sow. Solen correctus, nom. nov., for Solen sloanii auet. Scissurona, gen. nov., for Scissurella rosea Hedley. Scissurona rosea remota, subsp. nov. Subzeidora, gen. nov., for Emarginula connectens Thiele. Rimulanax, gen. nov., for Puncturella corolla Verco. Cosmetalepas, gen. nov., for Fissurella concatenata Crosse and Fischer. Sophismalepas, gen. nov., for Fissurella nigrita Sowerby. Elegidion audax, gen. et sp. nov. Rixa, gen. nov., for Glyphis watsoni Brazier. Vacerra, gen. nov., for Puncturella demissa Hedlev. Vacerra demissa menda, subsp. nov. Haliotis naevosum improbulum, subsp. nov. Mesoclanculus, gen. nov., for Trochus plebejus Philippi. Notogibbula, gen. nov., for Gibbula cori Angas = Stomatella bicarinata A. Adams. Minopa, gen. nov., for Fossarina legrandi Petterd. Leiopyrga octona problematica, subsp. nov. Spectamen, gen. nov., for Trochus philippensis Watson. Ethminolia probabilis, gen. et sp. nov. Minolia pulcherrima emendata, subsp. nov. Salsipotens, gen. nov., for Trochus armillatus Wood. Fautor, gen. nov., for Zizyphinus comptus A. Adams. Astelena, gen. nov., for Trochus scitulus A. Adams. Mimelenchus, subgen. nov., for Phasianella ventricosa Quov and Gaimard. Bellastraea, gen. nov., for Astraea fimbriata auct. Bellastraea kesteveni, nom. nov., for Astraea fimbriata auct. Stipator, gen. nov., for Teinostoma starkeyae Hedley. Lodderena, gen. nov., for Liotia minima Ten.-Woods. Patelloida alticostata antelia, subsp. nov. Patelloida alticostata complanata, subsp. nov. Notoacmea mixta mimula, subsp. nov. Radiacmea insignis cavilla, subsp. nov. Notoacmea flammea diminuta, subsp. nov. Naccula, gen. nov., for Nacella parva Angas = Patelloida punctata Quoy and Gaimard.

Patellanax, gen. nov., for Patella squamifera Reeve. Parvacmea illibrata mellila, subsp. nov. Cellana variegata ariel, subsp. nov. Botellus, gen. nov., for Onoba bassiana Hedley. Coenaculum, gen. nov.. for Scala minutula Tate and May. Stiva royana, sp. nov. Cacozelia, gen. nov., for Cerithium lacertinum Gould. Seilarex, gen. nov., for Seila attenuata Hedley. Gazameda, gen. nov., for Turritella gunnii Reeve. Glyptozaria, gen. nov., for Turritella opulenta Hedley. Colpospira guillaumei, sp. nov. Crosseola, gen. nov., for Crossea concinna Angas. Dolicrossea, gen. nov., for Crossea labiata Ten.-Woods. Icuncula, gen. nov., for Cingulina torcularis Ten.-Woods. Austrotriton (parkinsonius) basilicus, nov. Cymatiella, gen. nov., for Triton quoyi Reeve. Propesinum, gen. nov., for Natica umbilicata Quov and Gaimard. Propesinum umbilicatum minusculum, subsp. nov. Propesinum (umbilicatum) mimicum, nov. Triviella merces, sp. nov. Baryspira fusiformis gaza, subsp. nov. Scaphella caroli, nom. nov., for Voluta maculata Swainson. Cymbiola complexa, nom. nov., for Voluta punctata Swainson. Gemmoliva, subgen., nov. for Oliva triticea Duclos. Cupidoliva, gen. nov., for Olivella nympha Adams and Angas. Pervicacia, gen. nov., for Terebra ustulata Deshayes. Pervicacia assecla, sp. nov. Teleochilus royanus, sp. nov. Colus novae-hollandiae grandiculus, subsp. nov. Berylsma, gen. nov., for Fusus waitei Hedley. Propefusus, gen. nov., for Fusus pyrulatus Reeve. Microvoluta royana, sp. nov. Peculator verconis, gen. et sp. nov. Radulphus royanus, gen. et sp. nov. Zella, gen. nov., for Terebra beddomei Petterd. Galfridus, gen. nov., for Triton speciosus Angas. Typhis philippensis interpres, subsp. nov. Bedeva, gen. nov., for Trophon hanleyi Angas. Pugillaria gen. nov., for Siphonaria stowae Verco. Pugillaria stowae comita, subsp. nov. Additions to the New South Wales fauna are: Solemya australis Lamarck, Glycymeris holosericus Reeve, G. crebreliratus Sowerby, G. flabellatus Ten.-

Glycymeris holosericus Reeve, G. crebreliratus Sowerby, G. flabellatus Ten.-Woods, Ostrea mordar Gould, Chlamys undulatus Sowerby, Modiolus victoriae Pritchard and Gatliff, Gaimardia tasmanica Beddome, Myadora elongata May, M. subalbida Gatliff and Gabriel, Phragmorisma watsoni Smith, Lucina mayi Gatliff and Gabriel, Talabrica aurora A. Ad. and Angas, Dosinia victoriae Gatliff and Gabriel, D. caerulea Reeve, Solen vaginoides Lamarck, Saxicava subalata Gatliff and Gabriel. Ischnochiton tateanus Bednall, I. purus Sykes, Notoplax speciosa H. Adams, Scissurella ornata May, S. rosea Hedley, Macroschisma tasmaniae Sowerby, Leiopyrga octona Tate. Minopa legrandi Petterd, Calliostoma

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legrandi Ten.-Woods, C. allporti Ten.-Woods, Phasianella rubens Lamarck, Radiacmea insignis Menke, Notoacmea flammea Quoy and Gaimard, Radiacmea calamus Crosse and Fischer, Patelloida submarmorata Pilsbry, Lironoba australis Ten.-Woods, Botellus bassianus Hedley, Rissoina lintea Hedley and May, Heterorissoa wilfridi Gatliff and Gabriel, Capulus australis Lamarck, Plesiotrochus monachus Crosse and Fischer, Colpospira quadrata Donald, C. runcinata Watson, Naricava vincentiana Angas, Phalium pyrum Lam., Natica shorehami Pritchard and Gatliff, Sinum zonale Quoy and Gaimard, Cymatiella quoyi.Reeve, Baryspira tasmanica Ten.-Woods, B. fusiformis Petterd, Marginella tasmanica Ten.-Woods, M. dentiens May, M. gabrieli May, M. gatliffi May, M. caducocincta May, Terebra ustulata Deshayes, Propefusus pyrulatus Reeve, Nassarius tasmanicus Ten.-Woods, Philine columnaria Hedley and May.

I have included some additions to the Victorian List of Peronian molluscs sent by Roy Bell from the Mallacoota district, such as Ostrea glomerata Gould, Heterozona fruticosa Gould, Haploplax lentiginosa Sowerby, Haliotis coccoradiata Reeve, Clanculus floridus Philippi, Clanculus brunneus A. Adams, Cantharidella picturata A. Adams, Eurytrochus strangei A. Adams, Astelena scitula A. Adams, Notoacmea petterdi Ten.-Woods, Tectarius tuberculatus Menke, Baryspira fusiformis Petterd, and Xymene hanleyi Angas; many of the Peronian species now distinguished, also occur at Mallacoota, as Rhyssoplax jugosa Gould, Ischnochiton crispus Reeve, Callistochiton antiquus Reeve, Emarginula hedleyi Thiele, Haliotis naevosum Martyn, Gena impertusa Burrows. It may be noted that Roy Bell collected over two hundred species of marine mollusca in the Mallacoota district, which I hope to report upon soon, as previously there is searcely a record at all.

SOLEMYA AUSTRALIS Lamarck, 1818.

Solemya australis Lamarck, Hist. Anim. sans Verteb., v., 1818, p. 489, King George's Sound, Western Australia.—Mya marginipecta, ib., ex Peron MS., in synonymy.

Three young specimens of a *Solemya* were picked out of dredgings made in 6-12 fathoms in Twofold Bay, and these are provisionally referred to the abovenamed species, until series are collected and the locality given by Lamarck confirmed. I find similar young specimens in the Australian Museum, collected by Hedley and Brazier in Middle Harbour, Sydney, and these do not exactly agree with juveniles collected in King George Sound by Prof. Dakin also in the Australian Museum.

The genus Solemya was introduced by Lamarck with this species and S. mediterranea, and Gray (Proc. Zool. Soc. Lond., 1847, p. 192) named the latter as type. Dall, reviewing the group (Nautilus, xxii., 1908, p. 2) cited the former, and this error has been copied by Suter. According to Dall's classification this adds a superfamily Solenomyacea as well as a family Solemyacidae to the New South Wales List.

* (5) NUCULA PUSILLA Angas, 1877.

From the description and figure, this species appeared to be a *Pronucula*, and comparison of specimens I have collected on the Sydney beaches confirms this, necessitating its transference to that genus.

(6) NUCULA UMBONATA Smith, 1891.

When Smith named this species, he overlooked the fact that J. Hall (Nat. Hist. New York, Palaeont. v., 1885, pt. 1, p. 321) had appropriated the name.

^{*} These numbers refer to Hedley's Check List.

Smith did not describe the hinge, but it is a true Nucula so I rename it Nucula praetenta, nom. nov.

(7) NUCULANA CRASSA (Hinds, 1843.)

Described from "Australia" only; the type is a large shell agreeing with Tasmanian shells named *chuva* by Gray, collected by Jukes at Hobart. I therefore select Hobart, Tasmania, as the type locality of *crassa* Hinds. Twofold Bay shells are smaller and less coarsely sculptured, and this small form reaches north to Caloundra, Q'ld. If a name be desired, *hanleyi* is available.

(8) NUCULANA DOHRNI (Hanley, 1861). (Plate XXXV., figs. 14-15.)

Leda hanleyi Angas, 1873, is not a synonym of this species as given by Hedley, but is referable to the preceding (N. crassa Hinds) as will be seen from the description and figure, and which I have verified from examination of the type tablet preserved in the British Museum (Nat. Hist.), which is, moreover, labelled "N. crassa."

Sowerby (Conch. Icon. (Reeve), xviii., Nov., 1871, Laeda, Pl. ix., sp. 54), figured "Laeda dorhnii (sic) A. Adams. Hab ?" "Mus. Cum. in Brit. Mus.," probably from the same specimen, but the figure is very poor as it does not show the elegant elongate shape of this species commonly occurring in shallow water, 15-25 fathoms, in Twofold Bay (Pl. xxxv., fig. 14). From deeper water, 50-70 fathoms, off Green Cape, specimens were secured which differed from the preceding in shape, agreeing better with Sowerby's figure, and which may be shortly described as having the shape of N. crassa, with the sculpture of N. dohrnii. These I name Nuculana (dohrnii) tragulata, nov. (Pl. xxxv., fig. 15).

By this nomination, which I have referred to in my introductory remarks, I indicate the relationship of the species without dogmatising as to the absolute value of the observed difference. I note that the form described appears to be the deepwater relative of the shallow water N. dohrnii. Leda woodsii Tate (Trans. Roy. Soc. S. Aust., viii., 1885 (May, 1886), p. 133, Pl. ix., f. 8), from the Muddy Creek, is almost inseparable from N. dohrnii according to Tate himself, and its status would be shown by using the combination Nuculana [dohrnã] woodsii, while Leda crebrecostata Ten.-Woods (Proc. Roy. Soc. Tas., 1886 (1887), p. 112), as figured and described by Tate (loc. eit., p. 133, Pl. v., figs. 5a-b), appears to approximate very closely to the deepwater form here described, and this might be recorded as Nuculana [crebrecostata] tragulata, or Nuculana [dohrnii] crebrecostata might be used for the fossil form.

(11) NUCULANA MILIACEA (Hedley, 1902.)

This peculiar little smooth species is very different in appearance from the normal forms, so I provide the new genus *Comitileda* and name it as type.

(14) POROLEDA ENSICULA (Angas, 1877).

The elimination of all errors from a trebly-confused subject is a matter of great difficulty. In the present case, the specific identities have been correctly recognised with regard to the Australian species, but I propose to separate these generically and thus, perhaps, obviate further error. Hedley, dealing with bivalves dredged in 110 fathoms in New Zealand waters (Trans. N. Z. Inst., xxxviii., 1905 (June, 1906), p. 71, Pl. ii., fig. 7), gave the correct quotation for the introduction of the genus name *Poroleda*, Hutton, Macleay Mem. Vol., Linn. Soc. N.S.W., p. 86, Sept., 1893 (ex Tate MS.), figuring a recent shell doubtfully identified as agreeing with the fossil type, *Scaphula*? *lanceolata* Hutton, Trans.

N.Z. Inst., xvii., 1884 (1885), p. 332. Suter (Man. N.Z. Moll., 1913, p. 840) has remarked upon the different size and proportions of the recent shell, so it seems as well to name the species figured and described by Hedley as above; so I here rename the 110 fathom shell Poroleda pertubata. Poroleda spathula Hedley generally agrees with this species in the nature of the teeth, but Angas's Leda ensicula shows teeth of a different formation, though the shell is similarly elongated. I propose the new genus *Propeleda*, naming *Leda ensicula* Angas as type. Thiele's Antaretic Leda longicaudata (Dentsch. Sudpol. Exped., xiii., 1912, p. 229, Pl. xvii., fig. 22), as determined by Hedley from the Shackleton Iceshelf. Antarctica, is actually congeneric with this, and not a Poroleda as here restricted. The two species, ensicula and spathula, occurred together in Twofold Bay in 20-25 fathoms, but the majority belonged to the former species. In a deeper dredging off Green Cape, in 50-70 fathoms, many specimens turned up, but at this depth spathula predominated. This suggests that the latter is a deeperwater shell and this is confirmed by the series in the Australian Museum. P. spathula varied a little in shape, the larger ones, some exceeding the type in size. agreeing with Hedley's first figures, the smaller ones being more like the later painting made by Miss Clarke.

(23) LISSARCA PICTA (Hedley, 1899).

The generic name Austrosarepta, proposed by Hedley for this species, should be revived, as more material and study of Antarctic material shows this genus to differ materially from, though superficially resembling, the Antarctic and Subantarctic Lissarca.

Another item of interest is that No. 31, *Bathyarca perversidens* Hedley, should be placed after No. 17, *Cucullaea concamera* Bruguière, as it appears to be the southern degenerate deepwater relation of the tropical *Cucullaea*, agreeing in most essential features. Johnston described a *Cucullaea minuta* (Proc. Roy. Soc. Tasm., 1879 (1880), p. 40: Table Cape, Tas.) which name attracted me, but from the description it seems more like a *Limopsis*, such as *L. erectus* Hedley and Petterd (Rec. Anstr. Mus., vi., 1906, 224, Pl. xxxviii., figs. 14 and 15, from 300 fathoms, off Sydney).

(26) Arca fasciata Reeve, 1844.

Some years ago Hedley suggested that Arca pistachia Lamarek referred to the shell described by Smith as Arca (Barbatia) radula (Adams MS.) in the Challenger Reports (Lamell., 1885, p. 260, Pl. xvii., figs. 3, 3b). Smith's specimens came from Station 162; off East Moncoeur Island, Bass Straits, 38 fathoms, which he identified with Adams's shell localised as "Hudson's (i.e., Hobson's) Bay, Port Philip (sie), South Australia (recte Victoria) on seaweed 41 fathoms." Smith had overlooked the fact that Lamarck had described his species from almost the same locality, Ile King, but protested (Journ. Malae., xii., pt. 2, p. 27, June 29, 1905) that Lamarck's description was just as applicable to Arcafusca Bruguière or A. fasciata Reeve. Hedley searched, when in Europe, for Lamarck's shells without success and then acquiesced in Smith's rejection. Still more recently Lamy, studying Arca as a group, determined Smith's radula as simply a variety of Reeve's fasciata. This conclusion was accepted by Hedley who, therefore, used Reeve's name. This proves untenable, as Reeve had been anticipated by Schroeter (Archiv. Zool. (Wiedemann), iii., pt. 1, 1802, p. 129), so the matter must be reopened.

The description given by Lamarck agrees very exactly with the shells I

have received from Twofold Bay, the "extus grisea, intus fusco-nigricante," "ses valves sont striées à l'intérieur" being descriptive, and I accept Lamarck's name without hesitation, especially as he also included in his list of *Arca*, fusca Bruguière. Lamarck's specimens were in the Paris Museum, so it may be that the specimen noted by Lamy, labelled "barbata Lamarck," as fasciata Reeve is one of the original lot. As Lamy has pointed out (Journ. de Conch., lv., 1907, p. 51, footnote) Barbatia adolphi Dunker (Novit. Conch. (Pfeiffer), 2nd ser., pt. xiii., 1868, Pl. 37, figs. 1, 2, 3, p. 107) collected in Australia by Preiss seems related to, if not identical with, this species, and this name has priority over Smith's radula, the type locality apparently being south-west Australia, whence Preiss's specimens were sent.

Australian Arcas still require revision, as Lamy's treatment does not completely cover the points at issue. Thus the acceptance of a worldwide range for many species has already been disputed successfully by E. A. Smith and Hedley and consequently for No. 24, Gmelin's *afra*, given to a Senegal shell, should be eliminated from an Australian catalogue. Lamy states that Lamarck's *Arca pisolina* (Anim. s. Verteb., vi., p. 41, July, 1819: mers de la Nouvelle Hollande) is based upon small specimens he regarded as equivalent to *A. sculptilis* Reeve, and Lamarck's name would be preferable to Gmelin's.

For No. 30 an earlier reference is to Arca trapezia Deshayes (Rev. Zool. Soc. Cuv., ii., p. 358, Dec. 1839: "Sem Blas, Mexico" error ?). Hedley has discussed this name and has agreed to the decision, but Lamy, in confirming this, has noted that he has seen specimens from Panama which again suggest doubt; but Deshayes' figure is very like our shell.

(32) GLYCYMERIS AUSTRALIS (Quoy and Gaimard, 1834). (Plate xxxv., figs. 3, 18-20).

Pectunculus australis Quoy and Gaimard, 1834, clashes with P. australis Morton (Synops. Org. Remains Cret. Group, U.S., 1834, p. 64). The preface to the latter work is dated Jan. 1, and it is believed to have appeared early in that year, while there is no definite record of the publication of Quoy and Gaimard's essay in 1834. I, therefore, reject Quoy and Gaimard's name, as there are numerous other names for the Australian shell. Hedley has included as 32 A, G. australis flammeus Reeve, a colour variety he had collected at Twofold Bay some twenty years ago. May has recently added this variety to the Tasmanian fauna as occurring on the Furneaux Group, noting it also from Lakes Entrance, Gippsland, Victoria. Roy Bell sent me scores of washed-up valves and a few complete specimens in good condition from the Victorian locality. These showed a little variation in shape and sculpture, and, upon comparison at the British Museum, I noted several synonyms. A series dredged by Bell in shallow water at Port Fairy, Victoria, were mostly small and covered with a dark brown periostracum, those from Lakes Entrance being practically naked. These appeared separable and were regarded as striatularis. Lam. Then, from Twofold Bay, Roy Bell sent many magnificent examples dredged at various depths, some naked, some fully clothed. The larger, thicker shells were generally unclothed, the thinner shells fully covered: they showed obliquity in shape, but some of the young ones were regular. The fully clothed ones frequented the deeper water and never appeared to become so obese as the naked heavier shells, of which larger specimens still were sent from Disaster Bay in shallow water. From the shallow-water dredgings in Twofold Bay small shells, fully clothed, of varying shape and sculpture, were picked out. Then a series of small, almost

trigonal, shells were sent from a dredging made in 5-12 fathoms off Gabo Island, Victoria. Close criticism of the British Museum material showed that, while all these generally agreed in the hinge teeth (Pl. xxxv., figs. 18 and 20), a striking difference was seen in specimens from Sydney northwards in New South Wales, when the hinge was examined, the teeth being more numerous and more closely set together (Plate xxxv., f. 19). These agreed with Pectunculus holosericus Reeve (Conch. Icon., Vol i., Pectunculus Vol. iv., sp. and f. 18, March, 1843) from Australia: type in Brit. Mus. ex Mus. Cuming. Specimens dredged by the Challenger in Sydney Harbour, and by the Rattlesnake in Broken Bay, agreed with the type, and the velvety epidermis is a striking feature. Pritchard and Gatliff (Proc. Roy. Soc. Vict., xvii., Sept. 1904, p. 244) had cited P. holosericus as a synonym of *striatularis*, but it is very different in many ways. None of my specimens agreed with P. holosericus, but I collected shells at Caloundra that came close but did not agree exactly, and these were differentiated by Lamy (from specimens sent by Hedley) as P. hedleyi (Journ. de Conch., lix., 1911 (5 Feb. 1912), p. 123, Pl. ii., figs. 6, 7) from Bundaberg.

Mr. A. E. J. Thackway collected a series of valves at Port Stephens, New South Wales, which showed three distinct species, and then found the same three at Narrabeen. I collected some hundreds of valves on the latter beach, and found they could be easily separated and that the characters of each could then be gauged. This series illumined the Twofold Bay collection and I think I can represent the facts correctly as follows:—

Bundaberg to Caloundra, Queensland.

G. hedleyi Lamy.

Port Stephens to Sydney.

G. holosericus Reeve.

These appear to be closely allied and I have no record further south yet. Mast Head Reef, Queensland.

G. queenslandicus Hedley.

Moreton Bay to Sydney.

G. crebreliratus Sowerby.

Twofold Bay to Port Phillip, Vic.

G. tenuicostatus Reeve.

These appear to be related very closely.

G. flammeus Reeve seems to range from Port Stephens to Lakes Entrance, Victoria, and the Furneaux Group, Tasmania, the synonyms being *P. grayanus* Dunker (Proc. Zool. Soc. Lond., 1856 (8 May, 1857), p. 357): New Zealand (error) and Axinaea kenyoniana Brazier (These Proc., xxii., 1897, p. 781 from Lakes Entrance, Victoria.

G. flammeus is the largest and heaviest; broadly oblique, practically denuded of periostracum, hinge-teeth few and distant. G. holosericus never grows quite so big, but is still heavy, almost regularly orbicular, but when senile higher than broad, a velvety periostracum which is persistent, and the hinge-teeth numerous, set close together and in a roundly arched line. G. crebreliratus is much smaller, thinner, circular but semi-beaked posteriorly, sculpture stronger, with periostracum semi-persistent and not so velvety. G. tenuicostatus is similar, more trigonal in shape, more obese and thicker, sculpture still stronger and periostracum persistent and less velvety: teeth closer than those of flammeus, but not so close as those of holosericus.

The Tasmanian shells referred to *striatularis* Lamarck by local workers were not determined exactly by E. A. Smith in the British Museum, as they did not

agree with typical shells from King George Sound (Hist. Anim. s. Verteb., vi., July, 1819, p. 52). Specimens, above referred to, as being thinner and fully covered and more oblique, from Twofold Bay, agree very closely with southern Tasmanian shells, and Lamy (Journ. de Conch., lix., 1912, p. 112, Pl. ii., figs. 1-2) has figured a Tasmanian specimen for comparison with Lamarck's type (also figured). The series I secured on the beach at Port Fairy, Victoria, are heavier shells, more obese, with the teeth in the hinge more closely set, and approximate more closely to the type. I regard these as the eastern limit of the typical form, and propose to name the Twofold Bay and eastern Tasmanian series, figured since also by May (Illustr. Index Tasm. Shells, 1923, Pl. ii., f. 8) subspecifically as *Glycymeris striatularis suspectus* nov. (Plate xxxv., fig. 3).

Study of Muddy Creek and Table Cape fossils, in conjunction with long series of recent shells as above determined, would prove very interesting, as the shells in the British Museum labelled *G. cainozoicus* Ten.-Woods are of different shape, size, and teething and appear to include ancestral forms of more than one of the species above determined.

The corrections and additions to the New South Wales list would read:-

- 32 and 32 A Glycymeris flammeus Reeve, 1843 = australis Quoy and Gaimard, 1834 not Morton, 1834 = grayanus Dunker, 1856 = kenyoniana Brazier, 1898.
- 32 B Glycymeris holosericus Reeve, Conch. Icon., Vol. i., Pectunculus, Pl. iv., sp. and fig. 18, March, 1843: Australia: Brit. Mus. ex Coll. Cum., type probably from Sydney District.

33 Glycymeris gealei Angas, 1873.

- 33 A Glycymeris flabellatus Ten.-Woods, Proc. Roy. Soc. Vict., xiv., 1877 (11 July, 1878), p. 61: Victoria = P. orbicularis Angas, 1879: Bass Straits = P. beddomei E. A. Smith, 1885, as dealt with in the succeeding note.
- 33 bis error = 34 Glycymeris tenuicostatus Reeve, 1843.
- 34 A Glycymeris crebreliratus Sowerby, Journ. Linn. Soc. Lond., Zool. Vol. xx., 1889, p. 399, Pl. xxv., f. 20: Moreton Bay, Q.
- 34 B Glycymeris striatularis suspectus here named. Lamy, Journ. de Conch., lix., 1912, p. 112, Pl. ii., figs. 1-2; May, Illustr. Index Tasm. Shells, 1923, Pl. ii., f. 8.

(33) GLYCYMERIS GEALEI (Angas, 1873).

This species was described from Port Macquarie, New South Wales, and the type is in the British Museum (Natural History). It is a very obese, trigonal shell and does not appear to have been met with since: it agreed fairly elosely in shape and sculpture with specimens sent to the British Museum by Sir J. Verco as sordidus Tate from South Australia. The hinge-teeth are also similar, so it was suggested that the N.S.W. locality might be erroneous, but I have collected a valve on the beach at Narrabeen proving its distinction and correct locality. Roy Bell sent me a specimen of a ribbed *Glycymeris* from Lakes Entrance, Victoria, and then dredged a few nice specimens alive in 10-20 fathoms in Disaster Bay, and a valve was picked out of 20-25 fathoms dredging in Twofold Bay. These agreed very exactly with the types of *P. orbicularis* Angas (Proc. Zool. Soc. Lond., 1879, p. 420, Pl. xxxv., fig. 9) from Bass Straits, and *P. beddomei* E. A. Smith (Voy. Challenger, Zool. Vol. xiii., 1885, p. 252, Pl. xviii., figs. 1-1b), also from Bass Straits, 38 F., and these are regarded as synonyms of *P. flabellatus* Ten.-Woods (Proc. Roy. Soc. Vict., xiv., 1877 (11

July, 1878), p. 61), from Victoria. This was unfigured until recently when May (Illustr. Index) figured, under Tenison-Woods's name, the same shell. The matter is more complicated than here appears as Verco used, for the South Australian shell, G. pectinoides Deshayes, remarking upon the great variation. Lamy rejected pectinoides, to my view correctly, but records Verco's pectinoides as referable to *flabellatus*, not to *sordidus*, which he included as distinct. As a synonym of the latter, he suggests, following Hedley, G. insignis Pilsbry (Proc. Acad. Nat. Sci. Philad., 1906 (24 July, 1916), p. 213, fig. in text) from Geographe Bay, Western Australia. On account of the more numerous hinge-teeth I should allow Pilsbry's species distinction, as the Western representative, until more specimens have been collected. There appear to be two species, one trigonal with few teeth, one orbicular with more numerous teeth, and these are commonly represented among fossil collections, the former under the name subtrigonalis Tate, the latter under the name laticostatus Q. and G. from New Zealand, but which differs at sight from the N.Z. species by the closer crenulations of the edges of the valves and which should bear the name maccoyi Johnston.

(44) ISOGNOMON CUMINGII (Reeve, 1858).

This, of course, did not occur in the Twofold Bay collection, but I wish to make a note regarding the generic name Isognomon, for whose recent acceptance I was responsible (Proc. Malac. Soc. (Lond.), xi., 1915, p. 303). I there observed "I have not yet noticed Solander's usage of Pedalion, and it may be that Gray's was the first introduction of it. It is obviously equivalent to Solander's Isogonum as here discussed.." I have since noted that Dillwyn (Deser. Cat. Recent Shells, 1817, p. 281-282) wrote in synonymy "Pedalion perna," "Pedalion isognomon," "Pedalion ephippium" as of Solander's MSS., in connection with the first-named citing "Portland Cat. p. 52, lot 1242" and adding "was arranged by Dr. Solander in the Portland Cabinet under the name of Pedalion torta." None of these names is found in the Portland Sale Catalogue, and Pedalion only dates thus from 1817. In the Linnean Index to Huddesford's edition of Lister, published in 1770, I find the entry (p. 23): "Ostrea epphippium. Pedalion. Rudder. Solander." If this be acceptable Pedalion Huddesford will replace Isognomon.

(48) PTERIA PULCHELLA (Reeve, 1857).

This name, used by Angas, was accepted by Hedley without criticism, and, unfortunately, May has used the name in his Illustr. Index, though figuring a Tasmanian shell. The latter had, however, an earlier name, having been named *Avicula hyalina* Dunker (Zeitschr. fur Malak. (Menke), Jr. 9, No. 5, June, 1852, p. 75) and figured in the Conch. Cab. (Kuster), Bd. 7, Abth. 3, 1872, p. 32, Pl. 10, figs. 3-4, where *A. scalpta* Reeve was synonymised. *A. pulchella* Reeve was published in the Conch. Icon., Vol. x., Avienla sp. and f. 22, Pl. viii., March, 1857, from the Philippine Islands, while *A. scalpta* was sp. and f. 38, Pl. xi., from Australia. The type of the former in the British Museum did not exactly agree, while the latter was identical with shells from shallow water, Twofold Bay, and from Lakes Entrance, Victoria. Previous to Dunker, however, Quoy and Gaimard had named *Avicula georgiana* (Voy. de l'Astrol., Vol. iii., 1835, p. 457, Pl. 77, fig. 10-11) from King George's Sound and this appears the name to be used, unless the shell from the eastern coast can be differentiated, which appears a difficult matter in a variable featureless shell.

Lamarek had described Avicula papilionacea (Hist. Anim. s. Verteb., Vol. vi., July, 1819, p. 149) from "les mers de la Nouvelle Hollande. Péron Mus no"

citing as illustrations "Chemn. Conch., S, t. 81, f. 726" and "Encylop., Pl. 177, f. 5," the latter being a copy of Chemnitz's figure. This name has been used for the species here discussed, but Deshayes, in the 2nd edition of Lamarck (Vol. vii., 1836, p. 100) noted that the shell in the Museum was a distinct species from that figured by Chemnitz, which Lamarck had quoted, and that he could not quote any good figure like Lamarck's shell. Apparently he had one prepared simultaneously, as in his Elem. Traité de Conchyl. (plate dated 1835, but not published until 1850) Pl. 40, figs. 7-8, a good figure named Avicula papilionacea Lamarck is included. This proves that the name has nothing to do with the species now under review.

The generic name *Electroma* Stoliczka (Pal. Indica, iii., 1871, p. 391), proyided for *A. smaragdina* Reeve, should be used for this group as in the Coll. Brit. Mus.

(52) VULSELLA VULSELLA (Linné, 1758).

Smith's revision at the place quoted by Hedley allowed Vulsella spongiarum Lamarck as a distinct species from Southern Australia. As Smith, throughout that revision, used genetic features as specific characters, there should be little hesitation in allowing this form specific rank.

The name *Vulsella* was used, previously to Lamarck in 1799, by Humphrey in the Museum Calonnianum in a different sense, so must be here rejected.

Swainson proposed *Reniella* (Treat. Malac., 1840, p. 386) for a new species, *Reniella dilatata*, fig. 127, which is only an abnormality of the species V. vulsella Linné, so that Swainson's generic name will come into use.

(53 and 55) OSTREA ANGASI SOW., 1871 and OSTREA VIRESCENS Angas, 1867.

Mr. Hedley has suggested to me that these two names refer to the same species, and upon his proposal May had used the latter name; however, Mr. Hedley has indicated a still earlier name and allowed me to publish this account.

When Peron's account of his travels appeared (after his death), in Vol. ii., 1816, p. 80, is written "Annoncer que l'île Decrès a pu fournir à mes collections trois cent trente-six espèces de Mollusques, de Crustaces &c., c'est dire assez qu'il me seroit impossible d'entrer dans de longs details sur cette multitude d'animaux; je me bornerai donc à présenter quelques-uns des principaux résultats de mes observations en ce genre. I. A. l'entrée du petit port Daché, on trouve une grande espèce d'Huitre, qui forme sur ce point des bancs très-étendus: la chair de cet animal est tendre et délicate."

Lamarek described several species of Ostrea from the seas of New Holland without naming the collector, so that it is even doubtful if the exact locality be given. Some small species are named, such as O. numisma, of which Hanley wrote "having been founded on a single wretched specimen in the (Paris) Museum which is destitute of any decided characters, should be expunged from our catalogues." -

However, Lamarek's Ostrea sinuata (Hist. Anim. s. Verteb., Vol. vi., July. 1819, p. 208) is well described and compared to the European O. edulis, a convincing factor, inasmuch as to within very recent years the Australian and New Zealand oysters were regarded as only varietally distinct from that species.

Of this species Hanley wrote (Illus. and descr. Cat. Rec. Bivalve Shells. 1856, p. 300) "An examination of the type at the French Museum proves that the characters upon which this species has been founded are purely accidental: the name ought, consequently, no longer to be retained in our catalogues, the shell being practically undefined." As Hanley's translation of Lamarck's diagnosis was incorrect, and as he did not say what else Lamarck's species was (probably thinking of *edulis*), we need not obey his dictum.

From this conclusion, Ostrea sinuata Lamarck is the name for the shell recently known as O. angasii from Australia. The Neozelanic species known by the latter name seems to be a distinct species. The status of O. virescens Angas I have not yet decided.

(54) OSTREA CUCULLATA Born, 1778.

This species was described from the Mus. Caes. Vindob. without locality, but, when figured in the later work, the locality was given as West Indies and the Isle of Ascension and is still included in lists of these faunas. As there appear to be two forms in New South Wales, the name may be totally rejected. On the sheltered shores and with the mangrove associations is a form named by Gould glomerata: this appears to range further south, and Roy Bell sent it from Tellaburga Island, off the Victorian corner, which seems to be an addition to the Victorian fauna. The other form, which lives on the ocean reefs extending as far south as Long Reef, near Sydney, and which Bell collected at Lord Howe Island, may bear the name of *mordax* Gould. These names were proposed by Gould (Proc. Bost. Soc. Nat. Hist., iii., Dec., 1850, p. 346) for shells from New Zealand and the Feejee Islands respectively, and may later have to give way to some earlier name, as Solander appears to have collected specimens when here with Captain Cook, probably at Cooktown. Thus, in the Sale Catalogue of the Portland Museum, appears the entry on p. 139, etc., "Ostrea purpurea S. from New Holland, very rare."

The name O. purpurea falls as an absolute synonym of Born's O. cucullata, as Born's figures (Tab. 6, f. 11-12) were cited as illustrative of Solander's species.

(56) NEOTRIGONIA MARGARITACEA (Lamarck, 1804).

A large series dredged in 15-25 fathoms showed that little variation occurs in this genus, and that, in view of the lineage of the group, the observed differences may be regarded as of specific value. Thus, although Lamarck named King Island as one of the localities, Peron mentioned that he picked up the first specimens at Adventure Bay, South Tasmania. This may, therefore, be fixed as the type locality of Lamarck's species, and a series from Port Arthur, South Tasmania, are like the Twofold Bay shells, averaging a little larger, sculpture more spinose, beak still a little longer proportionately, and generally more compressed, but, to me, certainly conspecific. A long series in the Australian Museum, from Port Jackson, show these to be more solid though smaller, and to have a more acute beak with much less spinose sculpture, and these I regard as specifically distinct. Verco's T. beddomei is not easily confused, and I also separate this specifically without any hesitation. The deepwater forms are also separable and, so far, I have seen no large shells. Tenison-Woods proposed Trigonia lamarckii var. reticulata for specimens dredged in 45 fathoms off Port Jackson Heads, and notes "the shell is small and thin." For this, recently, the name given by McCoy to a fossil, acuticostata, has been used, but my criticism of fossils leads me to conclude that these show more variation than the recent shells, and in the British Museum collection two entirely different species, one from Muddy Creek, the other from Bairnsdale, are both named acuticostata. Of two specimens from Muddy Creek labelled howitti McCov, one is very like the Twofold Bay margaritacea, the other is much more elongated and quite distinct in appearance.

The juvenile sculpture has been investigated by Hedley and T. S. Hall, and I note that it persists longer in the southern shells than in the northern, and is followed by a flattened scale sculpture, which is soon lost in the normal eastern forms, is practically retained in the South Australian *beddomei*, and is exaggerated in the bizarre *strangei*.

(56a) NEOTRIGONIA GEMMA, n.sp. (Plates xxxiii., figs. 1-2; xxxv., f. 1).

Shell small, for the genus, triangularly ovate, scarcely inaequilateral, obese, rather solid, easily separable by its small size and shape. The radials number about twenty-two, each with about twelve triangular projections, easily counted from the edge, diminishing rapidly in size after that, and becoming less pointed: the interstices are finely lined. The ribs are finer on the posterior side, which is little produced and simply indicated by an angle, but medially a little depressed. The juvenile discrepant sculpture is well marked and the hinge is strong for the size. Length 14 mm.; breadth 14 mm.

Dredged as dead valves commonly in 50-70 fathoms, off Green Cape, N.S.W., a few young live ones among them.

Trigonia reticulata Agassiz (Etudes foss., 1840, Pl. 11, f. 10) anticipates Tenison-Woods's name, as I find topotypical specimens of the latter form come very close to my shell, though the description did not agree. Plate xxxiii., figs. 1-2 show N. gemma contrasted as to shape with young of N. margaritacea Lamo of same size.

(58) PECTEN MEDIUS Lamarck, 1819.

Inasmuch as this name must be abandoned it may be of interest to record my results. I find that there is geographical variation, and that probably the variation is of specific value. The Peronian shells are more orbicular, the right valve deeper and the ribs rounded and unsculptured between: the Tasmanian and Neozelanic shells are larger, more oval, the right valve shallower, the ribs of the former square and with thread lines between. This is practically in agreement with Tate's results, who also separated the South Australian shell as a variety only of the New South Wales form.

Tate (Proc. Roy. Soc. Tasm., 1886 (1887), pp. 113-116) reviewed the species and distinguished:—

Pecten fumatus Reeve for the New South Wales shell; var. albus or P. albus, South Australian; meridionalis, Tasmanian; and laticostatus for the New Zealand shell.

As the last name proves to be preoccupied, Reeve's *novaezelandiae* will come into use, but Tate's other names will remain.

Thus, *Pecten medius* is anticipated by Bose (Hist. Nat. Coquille, Vol. ii.; Hist. Nat. Buffon, ed. Deterville, Vol. 59, 1802, p. 275) who also introduced *Pecten fuscus* (p. 263) and *Pecten modestus* (p. 277). This leaves, as the oldest name, *Pecten fumatus* Reeve (Conch. Icon., Vol. viii., Nov., 1852, sp. and f. 32) from Sydney, so that this name is unquestionable, whether the other forms be regarded as varieties or species.

The series dredged in Twofold and Disaster Bays, 10-20 fathoms, show some interesting variation, as some have the interstices between the ribs on the convex valve smooth, while others have the interstices strongly striated: one specimen is smooth until two-thirds grown, then striate. However, I believe that all the southern shells tend to show striation, while the northern ones are smooth. Many specimens have recently been studied, strongly supporting the view that the observed differences are of specific value, while deepwater shells from off Twofold Bay are near the Tasmanian species. With regard to the generic name *Pecten*, it may be noted that Sherborn has included in the Index Animalium, 1901, p. 1156, the entry "*Pecten* P. Osbeck, Reise Ost. Ind. China, 1765, p. 391," and, that this is a nomen nudum, has been recorded by Dall. Using Forster's translation published in 1771, Osbeck wrote (Vol. ii., p. 100) "With the cable we pulled up a piece of coral, on which a red shell (*Pecten adscensionis*) was growing, which on its valves represented many branches. We took it with us, and at present it is preserved in one of the greatest cabinets of natural euriosities in *Sweden*." If this be regarded as descriptive it is suggested that the shell named by Osbeck was a *Spondylus*.

(65) CHLAMYS HEDLEYI Dautzenberg, 1901.

This species was dredged in 50-70 fathoms off Green Cape, and from recent dredgings by the Australian Museum Officials it appears to be a constant deeper water species. The name given by Dautzenberg must be rejected and Hedley's name *fenestrata* be resumed, as Forbes's name does not clash in any sense to-day.

(65 A) CHLAMYS UNDULATUS Sowerby, 1842.

Pecten undulatus Sowerby, Thes. Concl., Vol. i., 1842, Pecten, p. 60, Pl. xix., f. 206, 207; Mediterranean ? = Australia.

A value of this species was picked out of the shallow water dredgings from Twofold Bay, and on critical comparison was found in agreement with the (supposed) type of this species, and quite different from type of Angas's *tasmanicus*, with which it has sometimes been confused.

(74) LIMA ANGULATA Sowerby, 1843.

This species was described from Panama, and it is fortunate that the name is invalid, being used previously by Münster (Beitr. Petref. Kunde, Vol. iv., 1841, p. 73, Pl. 6, f. 30). Angas used *Lima orientalis* Adams and Reeve for this species, and this name is also included by Hedley (No. 78), though only one species is intended, and may be retained.

(75) LIMA AUSTRALIS Smith, 1891.

This would have been placed under *Limea*, but as it represents a distinct development from the fossil European type of *Limea*, and many species of deepwater relations are known, I propose the new genus *Notolimea*, naming *L. australis* Smith as type.

The species, *L. murrayi* Smith, inadvertently placed under *Limea* by Hedley (No. 81), should be transferred back to *Lima*, sensu lato, placed next to *L. orientalis* Ad. and Reeve, being referable to the section *Mantellum*, as Thiele has already pointed ont.

(77) LIMA MULTICOSTATA Sowerby, 1843.

The species bearing this name has been often regarded as a form of *Lima lima* (Linné), the latest authority to do so being Thiele (Conch. Cab. (Kuster), Vol. vii., 1920, p. 20).

I had, however, recorded it from the Monte Bello Islands (Proc. Zool. Soc. Lond., 1914, p. 666) living alongside a form of *Lima lima* (Linné), and being a quite distinct species.

Roy Bell sent many specimens, and I find it to be a very common shell here, dead shells abounding on all the beaches, and live ones, generally young,

attached by a byssus to the under sides of stones in rock-pools. Though very variable in shape, nothing like *L. lima* has been met with, and no intergradation is known.

The original locality of Sowerby's species was unknown, probably the Mediterranean Sea, and it has been recorded from other localities. As the name proposed by Sowerby had been previously used by Geinitz (Charak-Schichten Petref-sachs Kriede, Vol. i., 1839, p. 24, Pl. 8, f. 3) I am describing Roy Bell's specimens as a new species.

(77) LIMA NIMBIFER, n.sp. (Plate xxxiv., figs. 1-4).

Well known under the name of *Lima multicostata* Sowerby, and sometimes regarded as a variety of *Lima lima* (Linné).

Shell somewhat variable in shape, obliquely subovate, sometimes more rounded, sometimes irregularly elongated, rather compressed, fairly solid, white. Anterior side straight, with an excavate lunule, rayed longitudinally, a few faint cross lines sometimes showing; posterior side short, produced into an auricle similar to the anterior auricle and then, after a sinuation, sweeping boldly into a rounded margin. Hinge-line oblique, ligamental area long, lateral margins straight, showing no teeth. Sculpture consisting of about thirty-two ribs, narrow and with narrower interspaces; interspaces in adult smooth, in juvenile transversely striated; ribs in juvenile smooth, in adult bearing more or less regular lamellate projections.

Length of type 32 mm.; breadth 24 mm.; narrow form, length 36 mm.; breadth 20 mm. Common on the littoral of New South Wales.

The deepwater shell known as L. bassi Ten.-Woods (given to a fossil) appears to be the benthal representative of this species.

(84) MYTILUS PLANULATUS Lamarek, 1819.

In Victoria and Tasmania two species occur, living together, which differ in the character of the hinge teeth. May has recently regarded the larger narrower form as conspecific with the New Zealand *M. canaliculus* Martyn, and suggested that it might have been introduced. I have examined large numbers, and find that the second species commonly occurs also in Victoria, and is naturally endemic. The teeth do not agree exactly in growth stages with those of the New Zealand shell, and there is a name for the Tasmanian shell, *Mytilus tasmanicus* Tenison-Woods (Proc. Roy. Soc. Tasm., 1875, p. 161).

Mytilus planulatus was described by Lamarck from King George's Sound, Western Australia, and before using this name the type should be re-examined. There is a name given to the Sydney shell, Mytilus obscurus Dunker (Proc. Zool. Soc. Lond., 1856 (8 May, 1857), p. 360) and figured by Reeve (Conch. Icon., Vol. x., Jan., 1858, Mytilus, Pl. viii., sp. and f. 30).

Oliver recently (Proc. Malac. Soc. Lond., xv., 1923, p. 181) rejected M. edulis Linn. from the New Zealand List. This was an obvious conclusion, but he has replaced it by M. planulatus Lamarck, giving the range from King George's Sound to New South Wales and Tasmania, in New Zealand from Cook Strait southward, and at Great Barrier Island. He explained that the true M. edulis has an expanded lip, or hinge-plate, bearing a row of small teeth, usually four or six in number, while the New Zealand shell (which he calls planulatus) has only two or three teeth, placed inside the apex, not on an expanded lip. Reconsideration now appears necessary.

A name given in his synonymy by Hedley, and copied by May, Mytilus

dunkeri Reeve (Conch. Icon., Vol. x., Aug., 1857, Mytilus, Pl. v., sp. and f. 17), from the Philippine Islands, should be omitted, as it probably refers to a form of Stavelia subdistorta Recluz.

(85) BRACHYODONTES HIRSUTUS (Lamarck, 1819).

The acceptance of the generic name appears to be due to Jukes-Browne's Review of the genera of the Family Mytilidae (Proc. Malac. Soc. Lond., Vol. vi., 1905, pp. 211-224), but it is obvious that correction must be made. Jukes-Browne's definition of *Brachyodontes* reads "Anterior margin with several closeset teeth" and under the subgenus *Hormomya*, differentiated by form alone, he placed *hirsutus* Lamk., *rostratus* Dkr. in Reeve, while under *Brachyodontes* s. str. he allowed *menkeanus* Reeve. He then wrote under the genus *Modiolaria* Beck, "I have not paid any special attention to the genus *Modiolaria*."

I find that *hirsutus* Lamarck is apparently a close relation conchologically of the species *barbatus* Reeve and *splendidus* Dunker, which Hedley has placed in *Musculus* (i.e., *Modiolaria* olim) Nos. 92 and 97: that *rostratus* has prominent hinge-teeth, two and one, the muscle scars of *Mytilus* and a peculiar boss arising from the anterior muscle-scar; I do not see the "several close-set teeth on the anterior margin," but in *erosus* Lamarck (= *menkeanus* Reeve olim), above the ligaments, along the anterior side is a long row of small teeth only developed with age, very pronounced in senile shells, missing in juvenile ones. These are clearly seen in the figure of *Mytilus polyodontes* Quoy and Gaimard (Voy. de l'Astrol., Zool., Vol. iii., 1834-1835, p. 462, Pl. 78, f. 15-16), described from New Zealand, but incorrectly, the true locality apparently being King George Sound, Western Australia. For *hirsutus*, Ihering proposed *Trichomya*, adding thereto *Stavelia torta* Dunker, but *Stavelia* should have been used, if these were considered congeneric. As Ihering named *hirsutus* as type of *Trichomya*, that name can be retained as well as *Stavelia*.

Verco has recently described Modiola penetecta (Trans. Roy. Soc. S. Aust., xxx., p. 225), pointing out that the "hairlets" were branched like a stag's horn, whereas the "hairlets" in M. australis were simple. It is of interest to note that the hairlets are branched in hirsutus, also in Stavelia subtorta Recluz (= torta olim) and in the species of Musculus, barbatus Reeve and splendidus Dunker, for which I propose the new genus Trichomusculus, with barbatus as type.

Dall has recently proposed to reject *Musculus* Bolten on account of the prior "*Musc.*" of Martyn, but this is stretching a little too far. While there is suggestion that the abbreviation "*Musc.*" would have developed into *Musculus*, there is no proof.

The species included by Hedley (No. 98) as *Musculus subtortus* Dunker, I have collected in the Curl Curl Lagoon, near Manly, and this is a very aberrant form, if any close relation at all. The shell lacks the discrepant sculpture so characteristic of the "Musculus" group, is twisted, one valve partially clasping the other, and has very distinct and peculiar muscle-scars. I, therefore, propose for it the new generic name *Fluviolanatus*.

(86) MODIOLUS ALBICOSTUS Lamarck, 1819.

As there is serious doubt as to the validity of this name, and it is a long story, I propose to name the Australian shell so-called, and figured by May (Illustr. Index Tasm. Shells, 1923, Pl. iv., f. 6), *Modiolus delinificus*, nom. nov.

(87) MODIOLUS ARBORESCENS (Dillwyn, 1817).

As usual with a Chemnitzian name, many complications occur. A species was described by Chemnitz (Conch. Cab., Vol. xi., 1795, p. 251, Pl. 198, figs. 2016, 2017) under the name *Mytilus arborescens*, said to have come from the island of St. Domingo. This was made the type of a new genus *Amygdalum* by Muhlfeldt (Ges. Nat. Fr. Berlin Mag., v., 1811, p. 69) who called the species *Amygdalum dendriticum*. A world-wide range was developed, but Dunker and Reeve named many species which are still shown, without prejudice, in the British Museum. Shells from the Moluccas differ appreciably from the specimens dredged in Twofold Bay, while Western Australian shells are again different, a series from China looking most like mine. Tasmanian shells marked "beddomei Pett." agree closely, and I propose to use for the eastern Australian species the name *Amygdalum beddomei* (Plate xxxv., f. 21), which has recently been figured by May (Illustr. Index Tasm. Shells, 1923, Pl. iv., f. 8) under the name *Modiolus arborescens* Dillwyn.

(88) MODIOLUS AUSTRALIS Gray, 1826.

Hedley (These Proc., xlviii., 1923, p. 302) has recently rejected Gray's name as applicable to the southern Australian shell and suggested the usage of *Modiolus areolatus* Gould, given to a New Zealand specimen, regarding the Neozelanic and Australian forms as inseparable. When Lamarck described his *Modiola albicosta* he observed "On en a une variété élargie en spatule" and Tate wrote (Trans. Roy. Soc. South Austr., xx., 1897, p. 49), "Modiola australis Gray. This is also *M. albicosta* var. spatula Lamarck!"

(88 A) MODIOLUS VICTORIAE Pritchard and Gatliff, 1903.

Modiola victoriae Pritchard and Gatliff, Proc. Roy. Soc. Vict., xvi. (n.s.), Sept., 1903, p. 93, Pl. xv., figs. 1-2: Rhyll, Western Port, 6 Fath., Victoria.

This is an addition to the N.S.W. List, being dredged in shallow water in Twofold Bay.

(93) MUSCULUS CUMINGIANUS (Reeve, 1857).

Tate (Trans. Roy. Soc. S. Aust., ix., 1885-6 (Meh., 1887), p. 106) used this name for a South Australian shell, recording that *Lanistina nana* Dunker (Proc. Zool. Soc. Lond., 1856, p. 365), from Port Lincoln, was evidently the fry, but did not use the latter name though it was published on May 8, and Reeve's did not appear until December, 1857.

The common South Australian *Musculus* of this style is *paulucciae* Crosse (Journ. de Conch., 1863, p. 89, Pl. 1, f. 8; *Crenella*), Gulf St. Vincent, and this name appears in May's Check List Moll. Tasm., published in 1921, but in the Australian Museum Collection Hedley has crossed out *paulucciae*, and substituted *nana* which is correct.

(95) MUSCULUS RECENS (Tate, 1897).

This species, described as a recent member of the fossil genus Arcoperna, and Arcoperna scapha Verco, a second species, have been transferred to the genus Musculus. Investigation of this matter was induced by the receipt of two examples dredged by Roy Bell in from 50-70 fathoms off Green Cape, both live shells, but one badly smashed. They agreed in character with Tate's species, but differed in shape: they recalled *Crenella* in some ways, but did not suggest *Musculus*, the type of which is the N.Z. *impactus*. I think fossil relations have been described under the generic name *Crenella*, but I cannot reconcile their features with those of *Arcoperna* which is described as 4.5 mm. in height and *solid* whereas *A. recens* was described as 19 mm. in height, thin, translucent and vitreous.

Crenella globularis Tate (Trans. Roy. Soc. S. Anst., viii., 1885 (May, 1886), p. 126, Pl. x., figs. 3a-b), judging from the figure and description, suggests a relationship with Arcoperna scapha Verco.

SOLAMEN REX, n. gen. et sp. (Plates xxxiii., f. 15; xxxv., f. 2).

A genus of the Mytilidae (?) perhaps not distantly related to Crenella, but of no close relationship to Musculus.

The shell is globose, very thin, translucent, equivalve, inaequilateral, umbos a little anterior, obtusely incurved and approximate, white. The anterior margin is sinuate, then forwardly projecting, lower than the posterior which is more curved, the ventral border ovately rounded. Hinge-line very narrow and showing no teeth, but with a semi-internal ligamental groove. The sculpture consists of very fine radials, very closely packed, towards the ventral edge tending to bear scaly projections; growth-lines, which appear at intervals, become more crowded as the shell grows older. Muscular impressions two, the anterior small and ovate, the posterior large and rounded.

Length of type 11 mm.; breadth 8.5; depth of conjoined valves 8 mm.; larger broken shell 18 x 13 mm. Very closely agreeing with *Arcoperna recens* Tate (Proc. Malac. Soc. Lond., ii., 1896, p. 182), but differing in the shape and a little in sculpture.

(101 A) GAIMARDIA TASMANICA (Beddome, 1883).

Beddome describes Modiolarca tasmanica (Proc. Roy. Soc. Tasm. for 1882, (1883), p. 168) from Tasmania, and this was figured by Tate and May (These Proc., 1901, Pt. 3 (19 Dec.) p. 439, f. 12) and more recently by May (Illustr. Index Tasm. Shells, 1923, Pl. iv., f. 16). A few valves picked out of the shallow water dredgings in Twofold Bay enable me to add a family to the New South Wales List. As supplementary to my account (Proc. Malac. Soc. Lond., 1914, xi., p. 173) of the confusion between Modiolarca and Modiolaria, I can add the following information: In the Amth. Bericht, 24 Versamml. Deutsch Naturf. Kiel, Sept., 1846, p. 217, published in 1847, an account of the molluses named by Beck and Kroyer is given, the new names being recorded. Among these was "Modiolarca Gray für die mit Mytilus discors L. verwandten Arten." This had been printed in the Tagelblatt, No. 7, for Sept., 23, 1846, on p. 38, where Modiolarca Beck is quoted as a new genus for Mytilus discors L. In his List Brit. Anim. in Brit. Mus., pt. vii., 1851, p. 119, Gray used Crenella for a genus, citing as synonyms, "Modiolaria Beck, Loven, I.M., 1846" and "Modiolarca Gray, Syn. B.M., 1842, 92, Proc. Z.S., 1847, 199." In the Proc. Zool. Soc. Lond., 1854, p. 108, Gray explained (under the name Modiolarca, which he stated was founded on the Modiola trapezina, the characters of the family Crenellidae, given in the Synopsis B.M., pp. 144, 155, being based on that species). "Two genera have been made out of this word. Dr. Beck, when in this country, made a note that I had called the genus Modiolarca; but he appeared to have read it Modiolaria, and that name has been used for it. The latter name is now chiefly used for the more oblong *Crenellae*." It is interesting to note also that in the Proc. Bost. Soc. Nat. Hist., 1841 (1843), p. 26, at the meeting of June 2 is the information. "Conthouy presented 'A shell of a new genus, found only on the Fucus giganteus, which he has named Gaimardia fucicola.""

(106-123) Families THRACIIDAE and MYOCHAMIDAE.

The Australian shells referred to these two families are so confused and their characters so commingled, that it may be best to drop the former for the present, and refer all the species to the latter, with some emendations. The fact, that there are two series of shells of very similar appearance, has never been fully appreciated hitherto, and has made the recognition of named species very difficult. Firstly, there appears to be no typical Thracia in Australia, and, moreover, as in many cases of the early named genera, the exact application of the name (Thracia) is not even settled as regards European shells. Then (No. 106) Thracia anatinoides Reeve, described from Sydney, has not since been recognised, and it is here suggested, on Mr. Hedley's advice, that it may be based on the Sydney representative of the shell later named Periploma angasi Crosse and Fischer, the preceding species in Hedley's List (No. 105). Nos. 107 and 109 appear to refer to the same species, both being described by Smith at the same time, and the differences eited being seen in a series to be individual only, the name angasiana having place priority, the name jacksoniana falling as a synonym. No. 108 must resume its earlier name *jacksonensis*, as this name is not invalidated by the still earlier jacksoniana. No. 110 has not yet been definitely determined, but may be based on a juvenile specimen of 108; no series of either has been collected, while a different species has borne the name modesta in most Australian collections: this species I identify as No. 121.

All these show an external ligament, as does No. 114, placed under *Thraciopsis* in the List. I propose for this series the new name *Eximiothracia*, citing *Thracia speciosa* Angas as type, and the new names would read No. 106 Omit.

107 and 109 Eximiothracia angasiana Smith = jacksoniana Smith.

jacksonensis Sow. = brazieri Sow.

108 110 114

modesta Angas, may = jacksonensis Sow. speciosa Angas.

To this genus belongs *Thracia myodoroides* Smith (Chall. Rep., Zool. Vol. xiii., 1885, p. 70, Pl. 6, f. 6) from Bass Straits, which may even be only the southern representative of *angasiana* Smith. Tate's *Thracia perscabrosa* (Trans. Roy. Soc. S. Aust., 1886 (1887), p. 173, Pl. xv., f. 5), from the Muddy Creek, is very close in all its features. Some of my specimens 1 even determined as *myodoroides*, while others have the form of *perscabrosa*, so that perhaps we have here another series of zoological, geological and geographical relations. With regard to the succeeding numbers. 111, 112, 113, there is still more confusion, but the results read

No. 111 Thraciopsis angustata Angas.

112 Omit.

113 Thraciopsis elegantula Angas, not elegantula auct.

114 Transferred to Eximiothracia (ante).

113a Thraciopsis elongata Stutchbury.

113b Thraciopsis peroniana, nom. nov. for T. elegantula auct., figured by May (Illustr. Index Tasm. Shells, 1923, Pl. v., f. 7).

The genus *Thraciopsis* was provided by Tate and May for Angas's *Alicia*, preoccupied, and they named *angustata* as type. Valves of the two species simultaneously described by Angas appear to be common on the Sydney beaches, but on closer investigation the species locally named as *elegantula* proved to differ appreciably from Angas's description and figure. Moreover, Stutchbury

had, many years previously, named from Port Jackson, Anatina elongata (Zool. Journ., Vol. v., p. 100, Suppl., Pl. xliii., f. 9-10), which has been neglected. The description and figure are poor, but show a shell not unlike Angas's elegantula in shape, but with a long pallial sinus whereas Angas's shell had a very short sinus; the shell wrongly identified as Angas's species has a very long sinus. By means of live specimens dredged at Twofold Bay, I have been able to identify Stutchbury's species, which may be placed in *Thraciopsis*. It may be recalled that Smith rejected the genus Alicia, placing the species in Myodora, and Tate described some fossils under this genus, comparing them to the species of Alicia, as Myodora praelonga (Trans. Roy. Soc. S. Aust., ix., 1886 (Meh., 1887), p. 174, Pl. xix., figs. 12a-d) from Muddy Creek, very like angustata, and M. angustior (ibid., p. 175, Pl. xvi., f. 16) from Muddy Creek, a rather different elongate species. May recently described Myodora elongata (Proc. Roy. Soc. Tasm., 1915, p. 98, Pl. 8, f. 40-40a), which I propose to add to the N.S.W. List (post), which he has transferred to Thraciopsis in his Check List (p. 13, No. 73) and which would clash with Stutchbury's species if left here, but it seems a Myadora. Gould's Thracia cultrata is certainly unrecognisable from the description, but has nothing to do with angustata, suggesting a shell more like Periploma micans Hedley, the dimensions being 8 mm. x 6 mm. x 4 mm., the words "alba, tenuissima, ventricosa intus argentata, apophysa cardinali triangulari" indicating a genus unlike Thracia. Hedley's Thraciopsis arenosa (No. 112), sometime referred to Pholadomya, cannot be included with angustata, and it will be best to provide a new generic name for it alone, viz., Thracidora, rather than bandy it about still further in unsuitable genera.

The species arranged under Myodora require subdivision, and the smooth species may be separated at once, but it is suggested that later the corrugated species will be investigated and re-defined. To take them in Hedley's order, I find confusion in No. 117. Verco's Myodora corrugata has been made a synonym of albida Ten.-Woods, and Gatliff and Gabriel have described as a new species, Ten.-Woods's species had not been figured when I examined the subalbida. species in England, but since May has given a figure of albida which does not agree with specimens from Verco of his corrugata, nor with specimens from 100 fathoms off Cape Pillar, Tasmania, named albida by May. Then, as from the last-named locality, May has figured one valve as subalbida, which is quite different from Gatliff and Gabriel's figure of the type. Unfortunately, Verco's name had been used by Tate (Trans. Roy. Soc. S. Aust., ix., 1886, p. 175, Pl. xvii., figs. 11a-b), for a very different Muddy Creek fossil. On Plate xxxiii., figs. 3-4, 13-14, I have given photographs of the two species, albida and subalbida, as I have determined them.

No. 122, Myodora ovata Reeve must be rejected. It was described from the Island of Zebu in the Philippine Islands, and Reeve wrote "This species exhibits a greater disparity in the sculpture of the valves than any other, the striae of the right valve being very fine and close set, whilst those on the left are almost keel-like and comparatively distant," and the figures agree. The shell known in Australia by Reeve's name disagrees entirely, having strong sculpture on both valves, the southern shells very bold, especially those from Victoria and South Australia, which recall the description of Myodora corrugata Tate (Trans. Roy. Soc. S. Aust., ix., 1886 (Meh., 1887), p. 176, Pl. xvii., figs. 11a-b) from Muddy Creek, but disagree in shape.

I am describing the so-called "ovata" as a new species, and am continuing the usage of the original spelling Myadora, as I see no reason for alteration. The type of *Myadora* is the large species, *brevis* Sowerby, which has superficially a different appearance from the commoner species, but I have not yet found any separable structural character.

(122) MYADORA COMPLEXA, n.sp. (Plate xxxiii., figs. 9-10).

Shell of medium size for the genus, oblong-ovate, inaequilateral, fairly solid, anterior side rounded, longer than the posterior, which is straightly sloping and abruptly truncate. Right valve convex, left valve flat, clasped all round by the right valve.

The sculpture consists of bold concentric ridges, as well marked on the left as on the right valve where, however, they are more deeply incised; a microscopic radial sculpture overrides all the ribs, but is more easily seen on the flat valve; umbos acute, that of the right projecting over the left, a posterior area marked by a raised rib noticeable in the right, little elevated in the left, the sculpture being less pronounced towards the posterior truncation.

Type: length 26 mm.; depth 19 mm.; more rounded form, length 24 mm.; depth 19 mm. Well known under the incorrect name of *M. ovata* Reeve, common in the shallow water dredgings at Twofold Bay and very numerous in 10-15 fathoms in Disaster Bay.

(123 A) MYADORA ROYANA, n.sp. (Plate xxxiii., figs. 5-6).

Probably a deepwater relative of *M. pandoriformis* (Stutchbury) but of different shape and finer sculpture, while *M. australis* Johnston (Proc. Roy. Soc. Tasm., 1879 (1880), p. 40) from Table Cape, Tas., should be compared.

Shell inequivalve, almost equilateral but eccentric, thin, semi-ovate in shape. Right valve convex, left valve flat, clasped by right valve. In the right valve the apex is incurved, the posterior dorsal margin somewhat deeply concave, with a large truncation, the ventral margin convex, meeting the straight anterior dorsal margin at a rather acute rounded angle: the posterior area is marked by an obsolete ridge with the concentric sculpture, common to this genus, more marked than on the anterior area where they fade away towards the anterior end. This concentric sculpture consists of closely spaced ill-defined ridges, merging ventrally. The left valve corresponds in shape, but the sculpture is indefinite on the posterior area, which is faintly indicated and the ridges are more widely spaced and more noticeable towards the anterior end: a fine granular decussation (microscopic) overrides the sculpture on this valve. Length of type 17 mm.; depth 9 mm. In 50-70 fathoms off Green Cape, N.S.W.

(123 B) PHRAGMORISMA WATSONI (E. A. Smith, 1885).

Thracia watsoni E. A. Smith, Chall. Rep., Zool., Vol. xiii., 1885 (pref. 1 Oct.), p. 69, Pl. vi., figs. 5-5b: Station 162, East Moncoeur Island, Bass Straits. 38-40 fathoms.

When Smith described this shell, he wrote "This fine large species is remarkable on account of its flattened compressed character, and being almost equilateral. The ligament pit is very strong, and the outer epidermal shell layer is peculiar." This was intended in comparison with European Thraciae as the epidermal shell layer is very like that of the so-called Australian *Thracia*. A few years later Tate introduced the genus *Phragmorisma* (Journ. Roy. Soc. N.S.W., xxvii., 1893 (Mch., 1894), p. 189), giving as examples *Thracia watsoni*

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS,

Smith and *Phragmorisma anatinaeformis* nov., Pl. xii., fig. 1, an "Eocene" fossil from Spring Creek, near Geelong, and Table Cape, Tasmania, apparently naming the latter purely because it was the fossil representative of the recent shell. Three dead and broken valves, dredged in 15-25 fathoms, in Twofold Bay, add this interesting genus to the New South Wales List.

(145) CRASSATELLITES KINGICOLA (Lamarck, 1805).

The generic name *Crassatella* having, in its first introduction, simply a figure eited, which proves to be that of a *Maetra*, the name has been abandoned. The substitute utilised, *Crassatellites*, seems a bad one for our purpose, and 1 have already advised its rejection. In any case, the name can only apply to a fossil series which differ from the recent ones. 1, therefore, propose *Eucrassatella* as a new generic name with *Crassatella kingicola* Lamarek (Ann. Mus. Hist. Nat. Paris, vi. (not v., as given by Hedley), Dec., 1905, p. 408) from King Island.

A fine series showing growth stages was forwarded by Roy Bell from the following places: about forty living specimens from 15-25 fathoms in Twofold Bay from sandy mud and soft mud; from 20 fathoms off Lennard's Island, 7 miles north of Eden from a fine sand bottom; and half a dozen from 15-20 fathoms in Disaster Bay from coarse sandy bottom. These show a little variation in shape, but constancy in coloration and sculpture: all the immature specimens are rounded, with short beaks, comparatively compressed, and with a pale brown epidermis. As they grow older, the beaks lengthen and the shell becomes more swollen, with the coloration becoming more blackish and wearing off at the umbos: they are, nevertheless, always a little compressed and the excavate lunule and escutcheon never deepen to any great extent. The sulcations at the umbos are always present, and number from twelve to sixteen before they fade away. The measurements of a growth series read: Altitude 27: longitude 33: depth of conjoined valves 15 mm.; then 38 x 46 x 22, 48 x 58 x 25, 55 x 62 x 30 and 57 x 65 x 30 respectively. Adults show variation in shape, as two dredged together give 65 x 75 x 30 against 60 x 82 x 35, while the largest of my series measures 72 x 90 x 42 mm. Verco has reviewed a series he dredged in South Australian waters, and those appear to range larger and be more swollen with slightly longer beaks and fewer sulcations umbonally. Although Verco stated "It is, therefore, least like C. kingicola Lam.," I think he intended "most like," and that his shells fairly represented the true form. Eastern Tasmanian shells are similar as regards sculpture, a little longer beaked than the Twofold Bay shells, smaller, more swollen and a little more solid.

Lamy (Journ. de Conch., lxii., No. 4, 15 Feb., 1917, p. 197, et seq.) has given a "Revision des Crassatellidae vivants du Muséum d'Histoire Naturelle de Paris," and has figured the type of *Crassatella kingicola* from King Island on Pl. vi., fig. 1, and I can exactly match the figure with some of my specimens. As Reeve, eighty years ago, had named many "species" which were not understood, in view of my own results I carefully criticised the British Museum collection. I found that all the shells coming from any given locality were comparatively constant and that errors of incorrect localisation could be at once detected. The attachment of the names required careful study, as some of the specimens described by Reeve were in the "Mus. Stainforth" which was dispersed, and nothing is at present known regarding the figured shells. Specimens named in the British Museum from the Cuming Collection may even be the missing shells, but, in any case, they are as anthentic as can be got. Reeve's castanea, decipiens, and pulchra were simultaneously described (Proc. Zool. Soe. Lond., Nov., 1842, pp. 42, 43),

from the "Coasts of New Holland," the two former being now localised as Swan River, the latter as coming from Port Essington and Kangaroo Island, the latter locality undoubtedly false. *C. errones* Reeve, a name sometimes met with, appears to be a clerical error for *decipiens*, the shell so labelled in the British Museum also being shown from Swan River. Ten years later A. Adams (Proc. Zool. Soc. Lond., 1852 (23 May, 1854), p. 90) published two more species, *Crassatetta obesa*, Pl. 16, fig. 2 from "New Zealand, deep water, Mr. Strange," and *C. cumingui*, Pl. 16, fig. 1 from "Moreton Bay, deepwater, Mr. Strange." The former has not since been found in Neozelanie waters, and it may be an obese juvenile aberration of the Moreton Bay shell, and not have come from New Zealand.

The South-west Australian shells are smooth with sulcate umbos like the typical form, but are constantly more elongate with deeply excavate lunule and escutcheon. These should bear the name castanea Reeve. The North-west Australian specimens are paler in coloration, and deeply sulcate throughout, as well as elongate in form: these should be called *pulchra* Reeve. Lamarck proposed the name C. sulcata for a Paris fossil, with a living species collected by Peron in New Holland as a variety (Ann. Mus. d'Hist. Nat., vi., Dec., 1805, p. 408), but later (in the Hist. Anim. s. Verteb., Vol. v., July, 1818, p. 481) practically transferred the name to the living species, citing the fossil as the variety. This has misled many writers into using the Lamarckian name for the recent shell. Nyst (Bull. Acad. Roy. Soc. Belg., 1847) and Deshayes (Traité élem. Conch., Vol. ii., 1851, p. 113) indicated the incorrect usage, and renamed the recent form lamarckii. Lamy (Journ. de Conch., lxii.) has figured the type of C. donacina Lamarck (Ann. Mus. d'Hist. Nat. Paris, vi., Dec., 1805, p. 408), and finds it is labelled as from "Shark's Bay, West Australia": as specimens from "Shark's Bay, West Australia," also collected by Peron, prove to be the recent sulcata, it is obvious that some error has crept in, and that the type of donacina came from King Island, and that the Shark's Bay shells are sulcate, belonging to *pulchra*, though at the extremity of the range it may show some variation. A different shell lives at Torres Straits, ranging down to Port Curtis, these shells having short beaks and semi-sulcation and apparently a form of this runs down into northern New South Wales, while a close ally is shown in the Australian Museum from Lord Howe Island. The Moreton Bay shell was named C. cumingii, and this can be used until a long series is collected from the southern localities and contrasted with the Torres Straits ones. Hedley has used for this, Reeve's name of corbuloides, but the specimen in the British Museum accepted as the type, and agreeing with Reeve's figure (Pl. ii., f. 9) is an abnormality from unknown locality, and compared by Reeve himself with a South American species. As the species was described from the "Mus. Stainforth," the real type may be lost, and therefore unrecognisable exactly. The following is given as the nomination suggested as a basis for further work :---

Eucrassatella kingicola Lamarck, 1805. From Southern New South Wales, = donacina Lamarck, 1805. Tasmania, Victoria and South Australia.

Eucrassatella castanea Reeve, 1842 (South-west Australia) = *decipiens* Reeve, 1842, = *errones*, lapsus only.

Eucrassatella pulchra Reeve, 1842 (North-west Australia from Shark's Bay to Port Essington) = sulcata Lamk., 1818, not sulcata Lamk., 1805, = lamarckii Nyst, 1847 = lamarckii Deshayes, 1851.

Eucrassatella cumingii A. Adams, 1854 (Queensland and Northern New South Wales).

Eucrassatella obesa A. Adams, 1854, said to be from New Zealand but locality yet unconfirmed.

(145 A) TALABRICA AURORA (A. Adams and Angas, 1864).

Crassatella aurora A. Adams and Angas, Proc. Zool. Soc. Lond., 1863 (1 Apl., 1864), p. 426, Pl. xxxvii., f. 15: Banks Straits, Tasmania; C. banksi id., loc. cit., p. 427, Pl. xxxvii., f. 16: same locality.

Roy Bell dredged six specimens in 12-18 fathoms off Lennard's Isle, near Merimbula, seven miles north of Eden, Twofold Bay. Each is a different size, and they vary in shape, slightly in coloration and in coarseness of sculpture. From study of this series and the types in the British Museum, I conclude that Adams and Angas's two species are simply individual variants, but agree with Sir J. Verco that *C. carnea* Tate may be recognised as the distinct Adelaidean representative.

After much study of the large kingicola, it is difficult to accept this form as congeneric, notwithstanding the great authority of Dr. Dall (Trans. Wagner Free Inst. Science Phila., iii., pt. vi., Oct., 1903, p. 1464) who concluded "Crassitina Weinkauff 1881 was proposed for the smaller recent species, which resemble Pachythaerus except in the greater development of the resiliary pit. The type of the genus (Crassatellites) (C. gibbosulus Lamarck, according to Bronn) belongs to the type named by Conrad Pachythaerus, which is, therefore, an absolute synonym of Crassatellites. Crassitina (sic) Weinkauff is only the modern representative of Pachythaerus, and therefore falls into the same synonym." It may just be observed that Pachythaeras Conrad was proposed for an American Cretaceous fossil, and the recent Austral forms differ too much to be considered congeneric, especially as Muddy Creek fossils vary appreciably from present-day shells.

With regard to the name *Crassatina*, above quoted, the details are of interest. In Kuster's continuation of the Conchylien Cabinet of Martini and Chemnitz, the monograph of *Crassatella* bears on the title page by "Löbbecke and Kobelt," 1886, without any indication that it had been begun by Weinkauff and that pp. 1-16, Pls. 1-6, had been published in Lief. 307 in 1881, and is recorded in the Zoological Record, and the name *Crassatina* there credited to Weinkauff. No species were named by Weinkauff and the group-name was later ignored by Löbbecke and Kobelt, but Dall (loc. cit., p. 1468) has named as type *C. contraria* (Gmelin) from Senegal, so we can leave it to that style of shell which is unlike ours.

Consequently, I propose *Talabrica* with *C. aurora* A. Adams and Angas as type. When Hedley discussed the "Thetis" mollusca, he noted the small species referred to *Crassatella* and queried *Crassatina* Weinkauff as being applicable. As above shown, it cannot refer at all, so I propose the new generic name *Salaputium* and name *Crassatella fulvida* Angas as type. This group is well developed in southern and eastern Australian seas, many species being already named, and new species being in collections, such as from the Kermadec Islands. Lord Howe and Norfolk Islands. No Australian collector, nor in all probability, any other student, would class these minutiae with the huge *Eucrassatella*, save by traditional assistance.

(156) CARDITA CALYCULATA (Linné, 1758).

Linné described his Chama calyculata from the Mediterranean Sea, and the local species is easily distinguishable. Fortunately, there are several names available. Lamarck described Cardita aviculina (Hist. Anim. sans Verteb., Vol. vi.,

July, 1819, p. 26) from Shark's Bay, Western Australia, and King Island. Naming the first as the type locality, the name may be used for the tropical form which resembles more closely the Mediterranean shell, so that Lamy regarded Lamarck's name as a synonym. Deshayes monographed the group, and he described *Cardita excavata* (Proc. Zool. Soc. Lond., 1852 (23 May, 1854), p. 100, Pl. xvii., figs. 1-3) from Sydney. Verco added as a synonym *Mytilicardia tasmanica* Ten.-Woods (Proc. Roy. Soc. Tasm., 1875 (1876), p. 161) from Blackman's Bay, south Tasmania, when he recorded the present species from South Australia as "Taken on the beach at Venus Bay, west coast of South Australia: very rarely dredged.".

(157) VENERICARDIA AMABILIS (Deshayes, 1854).

In the Check List are included V. amabilis Deshayes and V. beddomei Smith as different species. Tate and May (and more recently May) allowed two species, amabilis Deshayes and bimaculata Deshayes, citing as synonyms of the latter gunni Deshayes and atkinsoni Ten.-Woods. Pritchard and Gatliff followed Tate and May, but Verco discussed the species, noting the variation, and recognising the same two, recorded as synonyms of the former, beddomei Smith and gemmulifera Tate. No one observed that gunni had place priority over bimaculata, being described from Tasmania, while the other was localised as New Zealand, as was amabilis, all being published at the same time. Suter doubtfully admitted amabilis to the New Zealand list, but did not mention bimaculata.

Study of the British Museum collection in conjunction with a fine lot of specimens sent by Roy Bell, dredged at various depths in Twofold Bay and Disaster Bay, the latter being very large and typical beddomei, proves that beddomei is absolutely a synonym of amabilis; that probably the Neozelanic locality was false, and that it ranges from northern New South Wales down the east coast to southern Tasmania, and to South Australia as gemmulifera, but which does not seem separable even as Verco concluded. The species bimaculata apparently does not occur in New Zealand, but is common in Tasmania and Victoria, and atkinsoni Ten.-Woods is accepted as synonymous. Examination of the type of *quanii* in the British Museum showed that this species had nothing whatever to do with bimaculata, as it is a very small obese shell, most like elegantula Deshayes described from the China Seas. When Hedley described his Cardita cavatica, he observed "By its remarkable sculpture it is allied to a small group of Tertiary Cardita, typified by C. gracilicostata, Ten.-Woods, from which it differs by smaller size and greater length in proportion to height." I find this sculpture in the juvenile of amabilis, indicating the descent of amabilis from species not unlike gracilicostata, and that cavatica is related to amabilis, by keeping the ancestral style of sculpture in the deeper water.

(161) VENERICARDIA RAOULI (Angas, 1872). (Plate xxxiii., figs. 11-12).

This recently re-discovered species appears to be a regular constituent of the deeper water fauna, a large number being secured in from 50-70 fathoms off Green Cape, N.S.W. It is quite an abnormal species, recalling the shorefrequenting *Cardita* in form, so I propose the new genus *Bathycardita* and name *C. raouli* Angas as type. Dall, when he studied this group, concluded that form was of more significance than the variations of the hinge-teeth.

Young shells show hollow spines on the ribs while senile specimens tend to smoothness, in which state they somewhat resemble *Cardita astartoides* von Martens (Sitz. Gesellsch. Nat. Freunde Berlin, 1878, p. 25) from Antarctic Seas. Hedley drew attention to Clessin's *Cardita racuti* Angas (Conch. Cab. (Küster), Bd. x., 1887, p. 11, Pl. 2, figs. 7-8) suggesting it was meant for *raculi*. This is certain, but the shell figured by Clessin was in the "Coll. Paetel" from "Neuseeland," and is *not* the present species. *Bathycardita raculi* (Angas) is a characteristic molluse of the deeper water of southern New South Wales, being represented in nearly every haul over 50 fathoms. With it was associated the solitary coral, *Flabellum australe* Moseley (Chall. Rep., Zool., Vol. ii., 1881, p. 173, Pl. vii., figs. 4, 4a, 5, 5a, 5b), which was described from Station 163, off Twofold Bay, 120 fathoms.

(173) LUCINA INDUTA Hedley, 1907.

This deep-water form was not dredged by Bell, and is here noted simply for the purpose of amending the name. Lucina has lost its traditional usage, and is now restricted to an American type, nothing like the present quaint little species. Hedley's good figures and description are sufficient for every purpose, so I simply propose the new generic name *Mendicula*, and rename the sole species, *Mendicula memorata*, as *Lucina induta* had been previously used by Stoliczka (Martens, Journ. Linn. Soc. Lond., Zool. xxi., 1887, p. 174).

(177) MYRTAEA BOTANICA Hedley, 1918.

Valves were dredged in 50-70 fathoms off Green Cape, N.S.W., and these agreed with the figures and descriptions of *Lucina mayi* Gatliff and Gabriel (Proc. Roy. Soc. Vict., xxiv., n.s., Sept., 1911, p. 189, Pl. xlvii., f. 8-12), who described their species from Port Phillip, Victoria, 5 F., noting that it differed from *Lucina brazieri* in the possession of radial sculpture and much sharper sculpture. Hedley, accepting this difference, when he transferred Sowerby's twice-named *Tellina brazieri* to *Myrtaea*, renamed the Sydney shell *Myrtaea botanica*. The Sydney species, however, possesses radial sculpture and differs only in its larger size. Consequently, Hedley's name would become subspecific only. Hedley has also named *Myrtaea bractea* (Zool. Res. Endeavour, pt. i., 22 Dec., 1911, p. 99, Pl. xvii., figs. 5, 6, 7, 8) from 100 fathoms south of Cape Wiles, S. Aust., which does lack radial sculpture, and is quite distinct. For this group I propose *Notomyrtea*, naming *M. botanica* Hedley as type, the excellent figures and descriptions already published enabling easy recognition.

(180) DIPLODONTA ADAMSI (Angas, 1868).

For this species, described by Angas under the genus *Mysia*, subgenus *Felania*, I propose the new generic name *Numella*. This genus appears to be close to *Felaniella* Dall (Journ. Conch., ix., 1899, pp. 244-245), proposed for a Japanese species *Felania usta* Gould.

The two Australian species, adamsi and jacksoniensis, both of Angas, published at the same time, differ a little from each other in their hinge-teeth, but they may, for the present, be classed together. I could not understand how this species had been placed under *Diplodonta*, and left there so many years, until I found that it was one of the commonest shells of the Sydney beaches, being even used to make ornaments by the aborigines of Botany Bay, and thus, on account of its very commonness, had escaped serious study.

When Tate met with a fossil, he named it Sacchia (sic) suborbicularis (Trans. Roy. Soc. S. Aust., 1886, p. 147, Pl. xviii., fig. 10a-e) comparing it with these shells, but noting the hinge so unlike that of Diplodonta, and evidently not examining the hinges of these two species.

(187) ERYCINA ACUPUNCTA Hedley, 1902.

When Lamarck introduced the genus *Erycina* (Ann. Mus. Hist. Nat. Paris, vi., Dec., 1805, p. 413) he stated "On ne connoit encore que des espèces fossiles," and described six fossils as *E. laevis, pellucida, trigona, inaequilatera, fragilis, and elliptica*. In the next volume (p. 53) he continued with *E. undulata, pellucida* (again), obscura, miliaria and radiolata.

In Hist. Anim. s. Verteb., Vol. v., 1819, p. 485, he added, as a recent species, *E. cardioides* from King George Sound, Australia, and this species has been cited as the type by some writers, e.g., Chenu. By technical manipulation, the generic name has recently been revived in connection with a fossil group, but its nomenelatorial status is very uncertain, and certainly the name *Erycina* should not be used in connection with Australian recent mollusca. I, therefore, propose the new genus *Melliteryx*, naming Hedley's species, *acupuncta*, as type.

(190) BORNIA LEPIDA Hedley, 1906.

The reference to *Bornia* is obviously due to Dall's conclusions, as admitted by Hedley in connection with the species he next dealt with (*Rochefortia donaciformis* Angas). The name *Bornia* is of such uncertain status, even in connection with European bivalves, that it would be unwise to continue its usage here. The species Hedley has named from New South Wales are very interesting, and Born's name may be retained in connection with Austral molluses by proposing the new genus *Borniola*, and citing the commonest species, *B. lepida* Hedley, as type.

(198) ROCHEFORTIA ANOMALA (Angas, 1877).

This is a case where a name change can be welcomed. When Dall dismissed the generic name *Tellimya*, he selected *Mysella* Angas as the best substitute: a little later he recognised *Rochefortia* as congeneric, and on the score of priority gave it precedence. This usage was accepted by Hedley, but Dall had erred, and *Mysella* has priority. We are, therefore, at liberty to use an Anstralian name for Australian shells, without discussing the relationship of the foreigner.

Mysella Angas, Proc. Zool. Soc. Lond., 1877 (1 Aug.), p. 176; Type by monotypy M. anomala, id., Pl. xxvi., f. 22. P. J.

Rochefortia Velain. Compt. Rendus Acad. Sci. Paris, lxxxiii., 1876, p. 285, nom. nud.; Archiv Zool. Exper., vi., 1877 (1878), p. 132.

Velain's paper was read on 11 April, 1877, and passed for printing by the examiners on 12 Nov.. 1877, only, and the title page reads 1878.

(217) CARDIUM PULCHELLUM Gray, 1843.

Hedley, dealing with the "Thetis" collection, proposed Cardium striatulum Sowerby var. thetidis, nov. (Mem. Austr. Mus., iv., part 5, 29 July, 1902, p. 322), writing "A considerable series taken by the "Thetis" appears specifically inseparable from C. striatulum," but gave differential features to justify a varietal name. I have compared the whole of the material in the British Museum with a large number of specimens and valves secured by Roy Bell in various depths, and find Hedley's characters are quite constant, and I accept their value as specific. The difference between this style of shell and typical Cardium is very great, and I, therefore, propose the new genus Pratulum, naming Cardium thetidis Hedley as type.

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(221) DOSINIA CROCEA Deshayes, 1853.

When Hedley examined in the British Museum collection of shells, the specimens, named as different species, in this genus, he observed that his conclusions must be revised. I received a large number of specimens and carefully criticised the British Museum series in connection with them, and arrived at certain results. More recently Mr. J. R. Le B. Tomlin, arranging some bivalves in the British Museum, studied this genus and, after he had completed his work, we both went over the whole lot and agreed upon every point. As our results were quite independently achieved, they may be regarded as fairly representing the truth.

Thus, we concluded that Deshayes *crocea* and *circinaria* were synonymous, and that the former name should be maintained on account of place priority.

(224 A) DOSINIA VICTORIAE Gatliff and Gabriel, 1914.

Dosinia victoriae Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxvii., Sept., 1914, p. 96, Pl. xvi., figs. 17-19: Western Port, 5-10 F.

Before this species was described, Mr. Gabriel sent it to me for comparison with the British Museum series; a shell sent by Bell from Twofold Bay, was found to differ from all the others, and regarded as new, until I remembered Gabriel's inquiry, when I found this shell was their new species, an addition to the N.S.W. List.

(224 B) DOSINIA CAERULEA Reeve, 1850.

Artemis caerulea Reeve, Conch. Icon., vi., Artemis, Feb., 1850, Pl. iv., sp. and fig. 25: Raine Island, Torres Straits, Captain Ince: Mus. Brit., i.e., error for Tasmania.

This species was found commonly washed up at Twofold Bay, N.S.W., but was not dredged, except as young, whereas, in Disaster Bay, it was dredged in 10-20 fathoms. This is a fine addition to the N.S.W. List.

(225) SUNETTA TRUNCATA (Reeve, 1864).

When Reeve figured this species he gave a reference to Deshayes, and I find that Deshayes had described a *Cuneus truncatus* (Cat. Conch. Biv. B.M., 1853, p. 43), from the Philippine Islands in Mus. Cuming. In his selection, Deshayes had been anticipated by Costa (Brit. Conch., 1778, p. 205), so that we are relieved of the consideration of Deshayes's specific name.

For the Port Jackson species, Angas had proposed the name Sunetta adelinae (Proc. Zool. Soc. Lond., 1867 (Apr., 1868), p. 909, Pl. 54, f. 5) and therefore no new name is required.

From Lakes' Entrance, Victoria, Roy Bell sent a number of valves of the species listed by Pritchard and Gatliff as Sunctta excavata, citing as basis, Cytherea excavata Hanley (Proc. Zool. Soc. Lond., 1842 (Jan., 1843), p. 123), described from unknown locality in the Museum Stainforth. The name has been commonly used for a Japanese species, but again, fortunately, discussion is unnecessary as there is a prior Cytherea excavata Morton (Synops. Org. Rem. Cret. Group U.S., 1834, p. 67). Two names are available for the southern Australian species, viz., Cytherea vaginalis Menke (Moll. Nov. Holl. Spec., 1843, p. 42) given to a Western Australian species, and Sunetta aliciae Adams and Angas (Proc. Zool. Soc. Lond., 1863, p. 425, Pl. 37, fig. 18) from Encounter Bay, S. Aust. According to the specimens in the British Museum these differed, and I propose

the use of Adams and Angas's name for the Victorian shell, and revive Menke's name for the Western Australian species listed by Hedley as S. excavata (Hanley). I find these are also separated as distinct in the Australian Museum.

Dall (Trans. Wagner Free Inst. Philad., iii., pt. v., Oct., 1903, p. 1245), admitted three groups of Sunetta, Sunetta s. str., type Donax scripta Linné; Solanderina Dall, 1902, type (o.d.) S. solandri Gray; and Sunettina Jousseaume (Le Naturaliste, Yr. 13, No. 108, 2 Ser., 1 Sept., 1891, p. 208), type, by tautonymy S. sunettina Jouss. The Australian species here noted fall into the last group, which should be used generically. S. gibberula Tate is a Muddy Creek fossil, ancestrally very closely related to the living S. aliciae Ad. and Ang.

(226) LIOCONCHA ANGASI (Smith, 1885).

Smith proposed Circe angasi as a new name for the shell named Gouldia australis by Angas (Proc. Zool. Soc. Lond., 1865, p. 459), when he transferred it to Circe, as the combination Circe australis was invalidated by the earlier C. australis Sowerby (Thes. Conch., Vol. ii., 1851, p. 651). When Hedley retransferred Angas's species to Lioconcha, he should have revived Angas's specific name. I cannot class it even in Lioconcha, so propose the new genus Gouldiopa, naming Gouldia australis Angas as type. When Smith named the species (Zool. Res. Challenger, Vol. xiii, 1885, p. 148, Pl. ii., figs. 4-4e), he gave a detailed description of the hinge-characters, and also figures, so that these are well known. I might point out, however, that the description is more accurate than the figures.

(227) GAFRARIUM QUOYI (Hanley, 1844).

When Dall reinstated *Gafrarium*, ex Bolten, he made two attempts to fix a type by elimination, and as it is doubtful whether either result is valid, the name may be dismissed from the Australian List. This is easier, since at the latter conclusion and place (Trans. Wagner Free Inst. Science Philad., iii., pt. vi., 1903, p. 1246), which Hedley has followed, he allowed *Circe* Schumacher (Essai Nouv. Syst. Test., 1817, p. 152), with type *Venus scripta* L., subgeneric rank. As Dall's subgenera are all available under present views as of full generic rank, and as the shell above named was previously called *scripta*, it will be admitted that *Circe* seems a very excellent alternative.

(227 A) FLUCTIGER ROYANUS, n. gen. et sp. (Plate xxxiii., figs. 7-8).

This is apparently the species recorded from Victoria by Gatliff and Gabriel as Gafrarium navigatum Hedley. The latter was described from the Capricorn Group, Queensland (These Proc., xxxi., 19 Nov., 1906, p. 476, Pl. xxxviii., fig. 33), and my shells were immediately recognised as congeneric from the figure. Comparison, in the British Museum, with valves sent by Hedley, proved them to differ in shape much more than the drawing would suggest. The general description given by Hedley applies to the sculpture and form, but the ventral margin in the southern form is less circular, and the altitude a shade less, and consequently the "waves" fewer in number, becoming obsolete towards the margin. It may be that the southern form is also larger, as Hedley's measurements are 6 x 5.4 mm., whereas mine are 9 x 8 and 11 x 9 mm. Both are dead valves, a right and a left, and are worn; they show the muscle impressions, but not the hinge-characters completely. As Hedley's species should be absolutely congeneric, and he dredged it alive, these may be recorded from that. When Smith (the only English writer (save Jukes Browne) who has studied bivalves) wrote

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up the Challenger Report, he lumped in a most aggravating manner and ranged all these under *Circe* (*Gafrarium* of to-day), and his conclusions have not been since reviewed. On Pl. ii., figs. 4, 4e, he gave figures of the hinge, etc., of *Circe angasi*, and this does not agree with what I can make out of the hinge of the present form, which agrees better with that of *Circe*.

(228) MACROCALLISTA DISRUPTA (Sowerby, 1853).

This species, with the next, *M. kingii* (Gray, 1826), was dredged in numbers in 10-20 fathoms, in and outside Twofold Bay, and variation in size and shape was noted. Further Tasmanian shells named *disrupta* varied a little further, while Sydney shells referred to this species should have a distinctive name. Dall proposed to use the above generic name, given to an American fossil, to replace *Callista*, a Polian name previously in use. The southern species vary *inter se*, and I propose to eliminate *Macrocallista* from the Austral list, proposing *Notocallista*, naming *C. kingii* Gray as type.

Tate (Trans. Roy. Soc. S. Aust., ix., 1886 (Mar., 1887), p. 161, Pl. xviii., figs. 6-8) named *Cytherea submultistriata* from the Upper beds at Muddy Creek, comparing it with *C. disrupta*, and it certainly seems a closely allied ancestral form, only, in my views, trinomially separable.

As synonyms of *M. kingii* Gray, I noted in the British Museum, *inflata* Sow. and *rutila* Sow., but remarked that *lamarckii* appeared more elongate, and I had a very large series for comparison.

(230) PITARIA SOPHIAE (Angas, 1877).

Hedley has used the emendation *Pitaria*, but the name was proposed as *Pitar*, and I am advised that this is of classical form, although Dall did not recognise this.

From his (Dall's) discussion (Trans. Wagner Free Inst. Science Philad., iii., pt. vi., 1903, p. 1264), it is obvious that the recognition of the genus *Pitar* is a difficult task, especially as he has regarded *Venus dione* Linné as subordinate, with subgeneric value. In the British Museum this species was placed alongside the two previous species, while *Pitar* was also recognised. For the present then *Pitaria* may be dismissed from the Austral List, and this species ranged under *Notocallista*.

(238) ANTIGONA STRIATISSIMA Sowerby, 1853.

Venus striatissima Sowerby was apparently proposed as a new name for Erycina cardioides Lamarek (Hist. Anim. s. Vert., Vol. v., July, 1818, p. 486) from King George Sound, W. Aust., on account of another Venus cardioides. When the species was removed from Venus, the earlier name should have been reverted to. It is quite unlike the typical Antigona, and I, therefore, propose for it the new generic name Chioneryx. As Angas noted, the species recalls superficially the British Venus ovata Pennant, which is the type of Timoclea Brown, but the hinge-characters differ.

Erycina, as already shown, was introduced for a series of fossils, and afterwards the present species was added as a recent representative, being then cited by some writers, e.g., Chenu, as type of *Erycina*.

(247) MARCIA NITIDA (Quoy and Gaimard, 1835).

Quoy and Gaimard described Venus nitida from Hobart, Tasmania, and the name proves to be preoccupied by Defrance (Diet. Sci. Nat. (Levrault), Vol.

lvii., 1828, p. 290. As synonyms may be noted: Venus fumigata Sowerby, Thes. Conch., Vol. ii., 1853, p. 737, Pl. elix., figs. 152-5: Australia (Strange).--V. laevigata Sow., ibid., p. 738, Pl. elix., figs. 156-8: Australia (Strange).--V. polita Sow., ibid., p. 738, Pl. elviii., figs. 139-40: given to Quoy and Gaimard's figure alone, therefore refers to Hobart, Tasmania.-Tapes faba Reeve, Conch. Icon., Vol. xiv., Feb., 1864, Tapes sp. 39, f. 39, Pl. viii.: Hab -? Mus. Cuming.

The specimens collected by Strange probably came from Sydney Harbour, and the figures agree very well with local shells. If southern Tasmanian shells differ, as they appear to do, they may bear Sowerby's third name.

The genus name *Marcia* was used by Hedley for this species and *scalarina* Lamarck, an association that seems strained, in view of the differential characters used in this family. *Marcia* proves to have been used previously by Warlow (Journ. Asiatic Soc. Bengal, ii., 1833, p. 100), and there is a generic name *Katelysia* Römer (Krit. Unters., May, 1857, p. 17), available for *scalarina* Lamk., that species having been definitely named as type by Dall, which should be used.

Dall proposed (Trans. Free Inst. Science Philad., iii., pt. vi., 1903, p. 1289), Macridiscus, naming Venus aequilatera Sowerby from Japan as type, observing "Venus faba Reeve and V. fumigata Sowerby seem to belong to this section" (of the subgenus Gomphina, genus Chione). Our shell does not seem to have a close relationship, disagreeing even with Dall's definition. I, therefore, propose the new name Eumarcia, naming Venus fumigata Sowerby as type.

(243) BASSINA PAUCILAMELLATA (Dunker, 1858).

Hedley has recently shown that the specific name must be *pachyphylla* Jonas, 1839, and a note on its station may be here intercalated, as, though Bell did not get this at Twofold Bay, he found a few valves at Port Fairy, Vic. I found it commonly on the beach at Port Fairy, Vic., and Hedley found it commonly at Twofold Bay, in each case in the early spring. Roy Bell never dredged it, which proves that it lives just below low water, not going even into 5 fathoms. Consequently, it is variable in shape, and the two fossils Tate described (Trans. Roy. Soc. S. Aust., ix., 1886 (Mar., 1887), p. 159, Pl. xiv., f. 14 and p. 160, Pl. xiv., f. 18) under the names *Cytherea paucirugata* and *C. murrayana* respectively, are obviously ancestral and scarcely separable save by the nomination I have suggested, a trinomial one indicating the ancestral form without prejudice to the specific status. Thus *Cytherea* [victoriae] paucirugata would have explained everything in one phrase at the time of description.

(262) Tellina inaequivalvis Sowerby, 1867.

In selecting a Linnean name, Sowerby lost his specific right, and I here propose the new name *Tellina beryllina* for Sowerby's shell, the type of which is in the British Museum.

The grouping of *Tellinid* species must be undertaken at the first opportunity, as in the British Museum they are arranged in the most haphazard fashion, the same species occurring under two different groups, even of family rank. Error has accumulated upon error, until it is difficult to determine any definite data.

Thus No. 272 is named Arcopagia striatula Lamarek, 1818, but Lamarek's Tellina striatula was based on "List Conch., t. 267, f. 103," with the locality "L'Ocean d'Europe," and Lister had no Australian shells. It is fortunate that Olivi (Zool. Adriat., 1792, p. 101) had previously used the name, and so settled the discussion.

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(263) TELLINA SEMITORTA Sowerby, 1867.

An interesting abnormal little Tellinoid was un-named from the British Museum Collection. In the Australian Museum Collection it was found under the above name, and specimens had been identified by comparison with British Museum specimens. Some error has crept in as, though Sowerby described and figured his species from the Mus. Angas from Port Jackson, and while one figure suggests the shell here dealt with, the description was probably drawn up from a variant of T. tenuilirata, named and handled at the same time. The words "half twisted," "flexuous posteriorly," "end rather acuminated" do not apply to the specimens under review, which I determine as *Tellina subdiluta* Tate (Trans. Roy. Soc. S. Aust., ix., 1885-6 (Mar., 1887), p. 65, Pl. iv., f. 9): Encounter Bay, S. Aust., 22 F.

(264) TELLINA TENUILIRATA Sowerby, 1867.

This beautiful little species was common in the shallow water dredgings in Twofold Bay and district, and it was obvious that it was not a normal *Tellina*. Upon investigation I found that E. A. Smith, in the Challenger Reports, had given details of the hinge-teeth, and suggested the differentiation of the species, but did not name it, generically. In the British Museum, so that there should be no difficulty in finding this peculiar species, the specimens were separated, some being placed under the section *Angulus*, of the genus *Tellina*, while others were found under the genus *Semele*, in a different family. I, therefore, propose the new genus *Semelangulus*, with this species as type, so that it may be as easily traced in literature.

Tellina masoni Tate (Trans. Roy. Soc. S. Aust., ix., 1886 (1887), p. 166, Pl. xvi., fig. 6a-b) from Muddy Creek is very like this, from description and figure, and should be compared with it as Tate does not mention the present species.

(277) ABRA ELLIPTICA (Sowerby, 1867).

Sowerby named his species *Tellina elliptica*, but this name had been previously used by Broechi (Conch. foss. Subapp., 1814, p. 513), and Lamarck (Hist. Anim. s. Verteb., Vol. v., 1818, p. 524). The species was described from Sydney in Angas's collection, and *Abra* is another of the Palaearctic bivalve generic names that is under discussion, and, therefore, not available for an Austral group. The only way to deal scientifically with the matter is the proposition of a new generic name for this species, *Abranda*, and renaming the species *Abranda rex*.

Superficially, this species appears to have fossil representatives, but the hingecharacters need careful study before associating species of complex history like this one.

(281) GARI LIVIDA (Lamarck, 1818).

Lamarck's *Psammobia livida* was localised as from Shark's Bay, W. Aust., and Dautzenberg et Fischer (Journ. de Conch., lxi., pt. 2, 1914, p. 224) have figured the types (Pl. vii., figs. 4, 5, 6). These figures suggest that two different species were confused, the figures 4, 5, referring to the species known as *P. modesta* Deshayes (*post*), while fig. 6 is in agreement with Lamarck's description, and represents the species previously known as *zonalis*. Smith (Chall. Rep., Zool. Vol. xiii., 1885, p. 95) separated *zonalis* and *modesta*, and gave a synonymy, drawn up from the British Museum specimens, which requires revision. From Dautzenberg and Fischer's notes, it is evident that they used Tasmanian specimens for their recognition of *livida*, and it is here suggested that the Shark's Bay locality may be erroneous, and that the specimens eame from southern Tasmania, where May states it is very common. Twofold Bay shells agree with such Tasmanian shells, but the northern shells, such as commonly occur on the Sydney beaches, differ in shape, tenuity, and size.

Deshayes described *Psammobia menkeana* (Proc. Zool. Soc. Lond., 1854 (8 May, 1855), p. 319) from Moreton Bay, and this was figured by Reeve (Conch. Icon., Vol. x., (Jan., 1857), sp. and f. 43, Pl. vi.) under the same name, from the type specimen, but without reference to Deshayes. This shell is more elongate with less height, and smaller and thinner than the Tasmanian *livida*, and is certainly not synonymous with *modesta* as given by Smith, but refers to the Sydney shell hitherto called *zonalis* = *livida*.

This would mean the acceptance of *Gari livida* (Lamarck, 1818) for the southern New South Wales species, and the recognition of *Gari menkeana* Deshayes for the northern and central New South Wales form, the exact value of the differences being at present unknown.

(291 A) SOLEN VAGINOIDES Lamarck, 1818.

Solen vaginoides Lamarek, Hist. Anim. s. Verteb., Vol. v., 1818, p. 451: D'Entrecasteaux Channel, S. Tasmania.

Many small specimens received from Twofold Bay and Disaster Bay are referable to this species, which is an addition to the N.S.W. List. Hedley has recorded Solen aspersus Dunker as a synonym, and Solen philippianus Dunker (Proc. Zool. Soc. Lond., 1861 (7 Apr., 1862), p. 420) may also be added, though E. A. Smith (Proc. Zool. Soc. Lond., 1906, p. 857) regarded it as a MS name, eiting it from Sowerby (Thes. Conch., 1874). While the facts in connection with this species seem fairly clear, it is otherwise with regard to the species already on the N.S.W. List, No. 291, Solen sloanii Hanley. This was described and figured (Illus, and Descr. Cat. Rec. Bivalve Shells, 1842, p. 12, Pl. xi., f. 18) from a British Museum specimen, so named in MS. by Gray. The tablet bears upon it the information "Mus. Sloane," hence the specific title, but no locality was known, and it obviously did not come from New South Wales, as the Sloane Collection was completed before any shells were collected in New South Wales. Other specimens I noted as marked Mus. Sloane are Turritella exoleta and Yet, when the History of the Collections in the British Monodonta labio. Museum (Natural History) was published in 1906, it was stated (Vol. ii., p. 704) "1759. Probably a number of shells were received with the collections bequeathed by Sir Hans Sloane (1759) and these would in all probability form the nucleus of the Museum Collection. It must be stated, however, that no record of any such specimens has been traced." The truth was, that no attempt was made to trace such specimens, as the shells themselves are, and have been, openly on view for the past forty years. Moreover, the year of the bequest is wrongly stated, being 1753, and there is on record the number of Shells, Echini, etc., this being 5845. To return to Solen sloanii, E. A. Smith recorded it (Proc. Zool. Soc. Lond., 1906, p. 857) from Zanzibar, and this is a more likely locality. I name the Sydney species, figured by Hedley (These Proc., xxiv., 1899, p. 432, fig. 3 in text), where the animal was described, Solen correctus, the shell being very like that of S. vaginoides, but straight. Tate has described a fossil from Muddy Creek as Solen sordidus (Trans. Rov. Soc. S. Aust., ix., 1886 (Mar., 1887), p. 181, Pl. xix., fig. 2).

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS,

(311 B) SAXICAVA SUBALATA Gatliff and Gabriel, 1910.

Saxicava subalata Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxiii. (n.s.), Aug., 1910, p. 85, Pl. xix., f. 10-12: Port Phillip, Victoria, 8 fathoms.

Valves of this species were found in the shallow water dredgings from Twofold Bay, N.S.W., but it has no close relationship with Saxicava, the sculpture suggesting the Eximiothracia-Phragmorisma series.

(319) NAUSITORIA SAULII Wright, 1866.

Calman, working on Marine Wood-Boring Animals (Proc. Zool. Soc. Lond., 1920, p. 397) named Xylotrya australis, n.sp., text-figs. 6, 7, 8, from Brisbane, Q'land, and Auckland, N.Z., figuring only the syntype from Auckland. This was the species known under the above name, apparently incorrectly, as, though Wright stated that the type specimens in the British Museum came from Port Phillip, Australia, they are labelled "Callao, Peru," and do not agree with the Australian species.

Xylotrya proves to be a synonym of Xylophaga, and the generic name to be used is Bankia. This name was first introduced by Gray (Synopsis Contents Brit. Mus., 1840, p. 150) as a nomen nudum; and then in 1842 (p. 76) in the same publication, Gray defined it: "In Bankia they (the pallets of Teredo) are elongated, and formed of small cones one within the other, looking somewhat like a quill."

(342-372) Class AMPHINEURA.

As this class was Roy Bell's objective, though dealt with fully elsewhere, a few notes must here be included, as the collection provided unexpected data in connection with the zoogeographical regions. May and I had separated the eastern Tasmanian Coast as showing a distinct Loricate faunula from that of the mainland eastern coast, with which it had been previously united. To test this, the present collections were made, and the separation has been emphasised. Thus the most characteristic Peronian Loricates, Sypharochiton pellis-serpentis Q. and G., Liolophura gaimardi Blainville, and Onithochiton quercinus Gould, disappear before they reach Twofold Bay. Rhyssoplax jugosa Gould continues down to Mallacoota, Victoria, but is replaced in Western Victoria (Port Fairy) by the Tasmanian species, Rhyssoplax diaphora Ire. and May. The Tasmanian Sypharochion (maugeanus Ire. and May) does not cross the Straits while two other Tasmanian species described at the same time, *Heterozona subviridis* Ire. and May, and Ischnochiton atkinsoni Ire. and May, proved to be the commonest species at Port Fairy, Vic., but not at Mallacoota, Vic. May and Hull found these at King Island, but May did not find them on the Flinders Group. This line of inquiry is being followed up. No Adelaidean form has reached Mallacoota or Twofold Bay, but the Peronian Haploplax lentiginosa Sow. was found commonly as far as Lakes Entrance, Victoria. The dredgings show some interesting items as from 18-25 fathoms in Disaster Bay and, later, in the same depths in Twofold Bay, a form of Ischnochiton tateanus Bednall was dredged, in the former case accompanied by a single Is. purus Sykes. Odd valves representing Callochiton mayi Torr. and Callistochiton mawlei Ire. and May were found in dredgings from 5-20 fathoms at Port Fairy, Vic., and out of the shallow water Twofold Bay dredgings values apparently referable to Rhyssoplax coxi Pils., R. carnosa Angas. Loricella angasi H. Adams, and Notoplax speciosa H. Ad. were sorted. Heterozona fruticosa Pilsbry was also found at Mallacoota, as expected, with the Peronian Callistochiton antiquus Reeve, Ischnochiton crispus Reeve and intermediate forms of Ischnoradsia and Ischnochiton proteus Reeve.
(373-375) Family PLEUROTOMARIIDAE.

This should be replaced by the family name Scissurellidae, as there is little real relationship between the present minute species and the huge recent descendants of the fossil Pleurotomaria. Moreover, there are two different genetic series present in these small shells, the true Schizotrochus (e.g., Scissurella australis Hedley) being quite irreconcilable with the Scissurella-Schismope series. Thus the type of Scissurella is exactly comparable with the immature stages of such a shell as Schismope beddomei Petterd, and absolutely represents an arrested stage in the development of Schismope. The carinate Schismope, as S. atkinsoni Ten.-Woods, are closely allied to the typical series, whereas such a form as Scissurella rosea Hedley is distinctly separable. The Schizotrochus series seems to have no close relationship with the true Scissurella, and is apparently a worldwide form in deeper water.

(373 A) SCISSURELLA ORNATA May, 1908.

Scissurella ornata May, Papers Proc. Roy. Soc. Tasm., 1908, p. 57, Pl. vi., figs. 4-5: Frederick Henry Bay, Tasmania.

The recognition of a single specimen of a true *Scissurella* suggested this species, and it generally agreed, allowing for the variation commonly noted in this group.

By this means *Scissurella* remains a constituent of the N.S.W. fauna, as *S. australis* Hedley belongs to the *Schizotrochus* series, a very different group.

I was going to omit this record for the present, when I found, in shell sand from Coogee, and also from Watson's Bay (Green Point), specimens of a true *Seissurella* along with specimens of an undescribed *Schismope*, allied to *brevis* Hedley, and many other minutiae, so that probably these things are well distributed, but have been merely overlooked owing to their minute size.

(375 A) SCISSURELLA ROSEA Hedley.

This species was described from New Zealand, and was afterward recorded from Tasmania by Hedley, who rejected the name obliqua used for it by Pritchard and Gatliff and Verco, as that had been given to a different species from Kerguelen Island. I first recognised this form in shell-sand from South Australia sent me by Dr. Torr: I then sorted it out of some splendid shell-sand Roy Bell secured at Port Fairy, Vic., and, later, I found it in the shallow water dredgings from Twofold Bay, N.S.W. All the specimens differ from typical Neozelanic shells in shape, the Australian shells being more ear-shaped, the last whorl longer, the earlier whorls larger, the mouth not so patulate, and, consequently, the slit apparently higher up. As a matter of fact, the Australian shell is more like the shape of Incisura lytteltonensis Smith, from which Hedley easily distinguished the Neozelanic shell. There is no close relationship between this species and the true Scissurella, and when Thiele monographed the family, he placed it in Incisura, with which it is certainly not congeneric. I, therefore, propose the new generic name Scissurona and name Scissurella rosea Hedley as type, and propose Scissurona rosea remota, n. subsp., for the Australian form, selecting a Twofold Bay specimen as type. I do this, as more critical examination, with longer series and better material, may also prove the necessity of separating the Adelaidean form.

The extreme localisation of Hedley's *Incisura* is worthy of remark, as, though I have examined much shell-sand and dredgings, I have not met with that genus outside Neozelanic waters, while it appears in nearly every Neozelanic sample examined. In the ease of *Scissurona*, I think *obliqua* from Kerguelen Island will be found to belong here, although decidedly not conspecific with the Australian or Neozelanic species.

(376) SCUTUS ANTIPODES Montfort, 1810.

Hedley has recently developed this genus and separated the well-known Western Australian species under the new name *Scutus astrolabeus*. The Twofold Bay shells were typically Peronian, but the Port Fairy (Victoria) series were somewhat intermediate, being notably broader than the Peronian shells, but just as obviously narrower than the typical King George Sound species. A fine series was sent from Port Fairy, and the measurements of adult shells, ten large ones being selected, varied from 99 mm. x 47 mm. to 84 mm. x 40 mm., the average being 91 mm. x 43 mm.; the height varied from 14 mm. to 18 mm., while the apex was from 22 to 24 mm. from the edge. Juvenile shells, well grown, varied from 45 mm. x 21 mm. to 74 mm. x 32 mm., the height of the lastnamed being 8 mm., and the apex situated at 17 mm. from the edge. I showed Mr. Hedley the figure of *Patella anatina* Donovan (Rees Encyclop. Conch., 1 Oct., 1813, Pl. xvi.), and he at once suggested it might be the Western Australian species. The figure, which appears life size, measures 79 mm. x 38 mm., with the apex 16 mm. from the edge.

(378) HEMITOMA ASPERA (Gould, 1846).

When Hedley rejected *rugosa* Quoy and Gaimard for the New South Wales shell on the ground that a Western Australian littoral species was unlikely to occur unchanged at Sydney, he selected Gould's name as above given, influenced by the known locality of Gould's species. There was on record an earlier name, Emarginula conoidea Reeve, figured in Conch. Syst., Vol. ii., 1842, Pl. cxl., fig. 7, where a view of the interior is given. Reference is made to the P.Z.S., 1842, where (on p. 50) the species was described from unknown locality, in the collection of W. Walton, Esq. A. Adams (Proc. Zool. Soc. Lond., 1851 (1852), p. 87) quotes Reeve's name in the synonymy of rugosa Quoy and Gaimard, giving locality "Australia M.C." The specimens regarded by A. Adams as belonging to rugosa Q. and G. were eastern Australian shells, and the interior view of Reeve's species shows a peculiar coloration of the spatula, as far as I can judge, characteristic of the Peronian form. I have compared long series of this with shells from Port Fairy, Vic., Port Lincoln, S. Aust., and Busselton, W. Aust., and I conclude the two forms are separable. At any rate, the shells from Caloundra, Q'land., Sydney Harbour and Twofold Bay, N.S.W., Mallacoota and Lakes Entrance, Vic., all in the Peronian Region, are similar and separable at sight from the Port Fairy (Vic.) shells, which are comparatively taller, the apex less central, the anterior slope more arched, the posterior steeper not spreading basally, sculpture finer and more regular. These differences are specially well seen in immature specimens, as aged ones are dirty, worn, and ill-shapen.

I introduced for this group the name *Montfortula*, and suggested its nearer relationship with the Australian *Emarginula* (such as *candida* A. Adams) than with *Hemitoma* s. str., and my more complete knowledge of the groups amply confirms my judgment, and I am now making a study of the radulae, so that in my next communication the facts will be so conclusive that no further argument will be necessary.

(381 A) EMARGINULA DEVOTA Thiele.

Emarginula devota Thiele, Conch. Cab. (Küster), Bd. ii., Abth. 4a, heft xxxvi., 1915, p. 81, Tab. 9, figs. 27, 28, 29: Port Jackson, N.S.W.; Hedley, Proc. Linn. Soc. N.S.W., xlviii., 1923, p. 307.

At the Kermadee Group I dredged a shell which, though Emarginuloid, presented a slight internal shelf, and I named it in MS. *E. connectens*, proposing to deal with the interest attached to such a shelf. Oliver, when later recording the Kermadee mollusca, did not include this new species. Thiele, at the quotation above given, has legitimatised the name, and, at the same time, proposed the present species, closely allied, from the mainland. I have seen the group represented, in the collection made at Lord Howe Island by Roy Bell, and also sorted out a couple of specimens from the deeper dredgings from the Twofold Bay district, and I have found it in shell-sand collected at Coogee, near Sydney. The characters of the group for which I propose the generic name *Subzeidora* (type *E. connectens* Thiele) are clearly marked: the small size, very long anterior slit, arched back with incurved posterior apex, being diagnostic without reference to the important internal shelf.

Thiele has recorded some of the interesting items I had written up some years ago, but, as Thiele's work will not be in the hands of the majority of the readers of this note, I may briefly indicate some of the peculiarities of Fissurelloid molluses. In this family the same shell condition appears to have been achieved by means of different evolutionary processes, and consequently coincidence or rather agreement in shell features is not conclusive evidence of animal relationships. Further, the complexity of the radula necessitates prolonged study of much material, and this is not yet available. Clues to the alliances of some species may be seen in the juvenile stage growths, but here again all is not clear.

Thus in *Fissurella* the "keyhole" formation in the apical foramen is obvious in some specimens and just as certainly absent in others. At first a high value was placed on this feature, but, when the same species was seen to show both styles, the character was rejected as absolutely valueless. More careful consideration might have shown that the facts could be reconciled in this way: some species begin with a keyhole and this persists in the adult; other species begin with a keyhole and at a later stage deposition, internally, of callus destroys the keyhole appearance; thirdly, no keyhole shape is seen either in the young or adult. Consequently, it is suggested that no juvenile without a keyhole form can produce an adult with a keyhole, while the reverse does occur. Thus, the keyhole juvenile shells show a different group from the ones that have no keyhole form in the young shells.

The internal shelf, persistent in the genus Zeidora, appears to be an ancestral feature, as it is seen in connection with most other groups. Thus, the evolution of the European Fissurella, from study of the growth stages, was demonstrated by Boutan (Arch. Zool. Exper., iii., 1885, p. 102, Pl. xlii., f. 5) and most of the stages are represented commonly as different groups, but, since then, other groups have been observed, showing different combinations. Granted that Rimula constitutes an arrested stage in the development of Fissuridea, there is a peculiar species of Emarginula, Semperia paivana Crosse (Journ. de Conch., 1867, p. 76, Pl. ii., fig. 2) from the Madeiran seas, which is an Emarginula until senile, when it closes the slit entrance. There is no shelf in these, but, in the group known as Cranopsis, a typically Rimuloid form, there is a large internal shelf, so that it has been generally called Puncturella. The species elassed as *Puncturella* are of different shapes, simply agreeing in being conical, and in the possession of an internal shelf. The deep-sea forms known as *Cranopsis*, such as *Rimula asturiana* Fischer (Journ. de Conch., 1882, p. 51) are represented in Austral seas by the magnificent *Puncturella corolla* Verco (Trans. Roy. Soc. S. Aust., xxxii., 1908, p. 193, Pl. xi., figs. 1-5). This group I name *Rimulanax*, with *P. corolla* as type.

The South African species classed at present in Fissuridea (Glyphis olim) show the remains of an internal shelf, a feature never seen in any Australasian species yet examined. We can arrange a series, from non-slit to apical-perforate shells without an internal shelf, and we can nearly parallel it, at present, with groups showing the shelf persistent, as, Scutus and Tugalia, Montfortula, Emarginula, Rimula and Fissuridea, with no internal shelf, then the first two groups unrepresented, Zeidora, Subzeidora, Cranopsis, Puncturella of many kinds and the South African Fissuridea with internal shelf, probably with offshoots in many directions as Emarginella and Scutus with huge animals, Subemarginula, Fissurellidea and then the Amblychilepas series ranging to Macroschisma, all of which have lost the shelf while developing the animals, mostly with perforate semi-patelloid shells. Moreover, it is suggested that these groups have evolved independently in their various geographic homes.

(382) MEGATEBENNUS CONCATENATUS (Crosse and Fischer, 1864).

This peculiar form appears almost unchanged in South Africa, the shell found there being still called by Crosse and Fischer's name, given to a South Australian species. Tenison-Woods has also recorded it as fossil, noting a slight difference between the fossil and recent shells, and also between the New South Wales and South Australian shells. It is, therefore, obvious that its peculiarities are of genetic importance, and I propose the new generic name *Cosmetalepas* with Crosse and Fischer's species as type. The shells I have received from the Twofold Bay district were dredged dead in the 50-70 fathom hauls off Green Cape, though a young dead shell was found in the shallow water dredgings, 10-15 fathoms, near Gabo Island, Victoria. I find it not uncommon as dead shells on the Sydney beaches, and there appears to be definite variation from the South Australian shells. Chapman and Gabriel have recently been unable to separate the fossils from the recent shells, probably on account of insufficient material.

(383) MEGATEBENNUS JAVANICENSIS '(Lamarek, 1822).

In the Man. Conch. (Tryon), Vol. xii., pt. 47, 16 Dec., 1890, Pilsbry monographed the Fissurellids, and (on p. 182) introduced the new genus Megatebennus, the American species, Fissurellidea bimaculata Dall being named as type. Two pages later, he proposed Amblychilepas, as a section, naming as type, F. trapezina Sow., the Australian shell here recognised as javanicensis Lam. The animal characters of the Australian forms have proved different in all the cases yet investigated, so there is no need to continue the usage of Megatebennus, but Amblychilepas should be regarded as the generic designation of this species. The series in the British Museum suggests that easily recognisable forms are separable, but I have no long series of my own to confirm this. When Dr. Pilsbry was here last year (1923), he regarded the animal as differing at sight from the American forms, so that there should be no hesitation in rejecting Megatebennus: moreover, he suggested the next species was certainly not a Lucapinella, neither was it a Megatebennus.

(384) LUCAPINELLA NIGRITA (Sowerby, 1835).

The species under note was included by Pilsbry in his new genus Megatebennus, when he proposed the new genus Lucapinella (Man. Conch., Vol. xii., pt. 47, 16 Dec., 1890, pp. 179, 195) with type, by original designation, Clypidella callomarginata Carpenter, from California. Hedley transferred the Australian species from Megatebennus to Lucapinella, from study of the animal, but, with our present knowledge of this group, the observed differences were quite sufficient to separate the Australian shell generically. Hedley gave a figure of the radula of his new species L. pritchardi (Proc. Roy. Soc. Vict., vii. (n.s.), 1894 (Jan., 1895), p. 197, Pl. xi., fig. 7), and the radula in the Gwatkin Collection, labelled L. nigrita, confirms this: i.e., the central tooth is degenerate and pear-shaped, the inner laterals with short somewhat blunt cutting edges, the large outer lateral strongly tricuspid; the marginals being comparatively few and simple, showing no ensps.

Although the radulae of the Fissurellidae are somewhat generalised, comparison with that of *callomarginata* Carpenter, the type of *Lucapinella*, shows striking differences. In the latter, the central is large and rhomboidal, the inner laterals are similar to those of the preceding, but the cutting edges are more pronounced, while the outer lateral is bicuspid, the third cusp, if present, being very minute and not recognisable, while the marginals are many and notably cuspidate. This radula is more like that of *concatenatus* Crosse and Fischer, but the onter lateral is differently shaped and the marginals are smaller, etc.

I have just remembered Claude Torr's paper, Radulae of some South Australian Gasteropoda (Trans. Roy. Soc. S. Aust., xxxviii, 1914, p. 362), and good figures of the radulae of *M. concatenatus* and *L. oblonga* are given: in the latter it is stated that the marginals are "serrated" and that each row has nine teeth, while in the former each row has twenty-one teeth.

From Port Fairy, Vic., Roy Bell sent a lot of shells of *nigrita*, a few *oblonga*, easily separated by longer shape, narrower, and of coarser sculpture. A few *nigrita* from Melbourne Heads agreed, but specimens from Twofold Bay, N.S.W., were narrower and with more lateral compression, though of same length and with similar fine sculpture. Shells I collected in Sydney Harbour showed the same differences.

The locality given when Sowerby introduced his Fissurella nigrita was Cape of Good Hope, but the shells in the Mus. Cuming (two sets), either of which might be regarded as types, are somewhat like the Tasmanian specimens in the British Museum. Consequently, an arbitrary determination of a type locality is necessary, and I here select Tasmania (southern) as such, and now introduce the new generic name Sophismalepas with F. nigrita as type. I think that Menke's F. oblonga, as recognised in Hedley's pritchardi, is undoubtedly congeneric. Hedley has recently given a figure of the animal (from Sydney) of this genus.

(384 A) MACROSCHISMA TASMANIAE (Sowerby, 1862).

This is a curious addition, if such it be, to the New South Wales list, as one of the first localities cited for the genus is New South Wales. Thus Sowerby (Conch. Illus. Fissurella, p. 5, No. 45, 1839) wrote "Fissurella macroschisma Humphrey, Conchology. Conch. Illust., f. 39, New South Wales, var. f. 39*, Swan River. Obs. This forms the genus Macroschisma of Gray."

The species I have to record was dredged as a dead shell, in 50-70 fathoms, off Green Cape, New South Wales, and the reference reads: Macrochisma tas-

maniae Sowerby, Thes. Conch., Vol. iii. (pt. 21), 1862, p. 206, Pl. 244, f. 223, from Tasmania. The next species is Macrochisma novaecaledoniae Sow., ibid., p. 206, Pl. 244, f. 222, from New Caledonia, and this is regarded as a synonym in the British Museum Collection, shells sent from Tasmania by R. Gunn being so labelled, the New Caledonia locality false, as in some other cases. A few complications may be here noted,—thus, the shell figured by Humphrey in his Conchology was named Patella macroschisma by Solander, and the name published in the Catalogue of the Portland Museum, p. 71, 1786. In the Museum Calonnianum, 1797, Humphrey proposed the genus Larva, and this is the only recognisable constituent. In the Genera of Recent and Fossil Shells, pt. 21, Pl. 147, fig. 5 (two views), 1823, Sowerby figured a Fissurella macroschisma, in the text referring as a synonym to F. hiantula Lam., which has no close relationship at all. Recognising this, Swainson (Treat. Malac., 1840, p. 356), introducing independently a genus Machrochisma, gave the name M. hiatula to Sowerby's figure. This does not look like the Japanese shell figured and named by Humphrey, nor does it well agree with any Australian species yet known.

A hitherto overlooked name is *Patella lobata* Donovan (Rees' Encyclop. Conchology, 1 Mar., 1881, Plate i.), which apparently refers to the Red Sea species named *M. compressa* by A. Adams (Proc. Zool. Soc. Lond., 1850, p. 202).

(385) DIODORA LINEATA (Sowerby, 1835).

Traditional determination is peculiar in its usage. Reference to Sowerby's figure did not suggest the New South Wales shell, and as it was described from unknown locality, I read the description without hopes of achieving anything tangible, but was surprised to find "Dorsal aperture small, much nearer to the anterior than to the posterior end, its margin internally truncated posteriorly": the italics are mine, as these prove Sowerby's species to have belonged to a different group from the Australian shell which does not show this feature. Such a shell as F. listeri D'Orbigny, from the West Indies, shows a posteriorly truncated aperture, and is very similar in shape to the Australian so-called lineata.

The transference of lineata to the Australian species seems to be due to Sowerby (Thes. Conch., Vol. iii., Mon. Fissurella, pt. 21, 1861, p. 195, sp. 80, Pl. 6, f. 134, 135) who synonymised incii Reeve, writing "Although first figured from a smaller specimen, there can be no doubt of the identity of this shell, to which the name subsequently given by Mr. Reeve was therefore unnecessary." Fissurella incii Reeve (Conch. Icon., Vol. vi., June, 1850, Pl. 10, f. 69a-b) had been described from Raine Island, Torres Straits, collected by Ince. Pilsbry (Man. Conch (Tryon), Vol. xii., (pref. Apl.), 1890, p. 219) called the species Glyphis lineata, giving as distribution: "North Australian Coast," gave figures (on Pl. 63, f. 29, 30) from specimens, and copied Reeve's figures (on Pl. 38, f. 63-64). Consequently, it would seem that, if lineata were available (which I deny), it would rather be applicable to the Torres Straits species. In every case I conclude the shell from Twofold Bay is nameless, and I propose to describe it as a new species, and also a new genus. In shell features it approximates fairly closely to the European type, but the apical fissure is different. Examination of the radulae in the Gwatkin Collection in the British Museum shows that similar shells cover different animals, as the radulae vary according to locality.

(385) ELEGIDION AUDAX, n. gen. et sp. (Plate xxxv., figs. 5-6).

A genus of the Fissurellidae with apical perforation of "keyhole" style, and radula somewhat like that of the European *Diodora*.

The sculpture consists of bold radiating ribs, with bold concentric rings latticing the ribs; the shape is oval, not quite twice as long as broad, and more than half as tall as broad, the apex at two-thirds the length. These proportions vary with age: the largest specimen I have in this series measures 55 mm. in length and 35 mm. at the broadest part but narrowed anteriorly to 27 mm.: it is 22 mm. in height just behind the apical fissure. A fairly small typical shell measures 13 mm. long, 9 mm. broad, scarcely any anterior lessening, and 5 mm. high at apex: in the young shells the "keyhole" shape of the perforation is seen with an internal callus surrounding it, and in the senile forms, the fissure, though having lost the keyhole shape, is still regularly oval and does not show a posterior truncation. In the immature the anterior slope is straight and the posterior slope is similar, but in the senile the posterior is convex and the anterior one slightly concave, the fissure being on this slope pointing forwards, not directly upwards as in the young stages. In the earlier stages about forty primary radials can be counted, but, as intercalating secondary ones appear almost at once, and then subsidiary, on the largest clean specimen I have examined I find, between two primary ribs, three secondary and three smaller. In the young shells the concentric rings are about a dozen and form strong nodules at their junctures with the radials, but with age these decrease so that the senile shells show simple latticing, the nodules having disappeared. The muscle scars are scarcely distinguishable.

The animal has been figured and described by Hedley under the name Fissuridea lineata (These Proc., 1900, p. 95, Pl. iii., fig. 11) but the coloration must vary, as I have seen many with the mantle pinkish-white dotted with pinkish-red.

(386) DIODORA WATSONI (Brazier, 1894).

When Brazier described this species, he commented upon its strange facies as probably deserving a new generic name. I separated four shells from the 50-70 fathom dredging off Green Cape, and they differed from any type of Fissurel-'lid I had previously studied. They were solid for their size, and showed a type of Fissurellid with an internal shelf and persistent apex, recalling some *Puncturella* forms, but very distinct from any Australasian form referred to *Puncturella*, of which I have half a dozen.

I hope to discuss these most interesting states later, but I here propose *Rixa* for this species alone, and by this means its later recognition will be assured. I might note, with the eccentricity off-times apparent in the British Museum collection, this species is placed in *Fissurella* s. str., a position so absurd as scarcely to call for comment. Judging from shell features, it would not even belong to the subfamily containing *Fissurella*. I find it not uncommon as dead shells on the Sydney beaches, but have not yet met with it alive.

(388) PUNCTURELLA DEMISSA Hedley, 1904.

This species was described by Hedley from New Zealand, and later when he found the form in Australian waters he gave a good illustration of this, though accepting the Neozelanic name. Comparison of the two figures will show that differences of form exist, and I propose to name the Australian shell Vacerra demissa menda, citing Hedley's figured specimen (Rec. Aust. Mus., vi., 1907, p. 289, Pl. 54, f. 3-5) as type, the generic name Vacerra being provided for the small -Austral forms ascribed to Puncturella, but which do not closely agree, even in superficial features, with the type of that genus. The present species I name as type of *Vacerra*, but do not conclude that all the species, even in the N.S.W. List, will prove later to be congeneric. This species was found in the Green Cape 50-70 fathom dredgings, but the other two species listed by Hedley as *Puncturella* were found in shallow water dredgings. I have a new species Roy Bell found alive, under stones, at low tide at Lord Howe Island, which appears to be the first met with in such a situation in Austral waters. I hope to report fully upon it later.

(391-394) Family HALIOTIDAE.

This family provides an excellent illustration of the difference between the Peronian and Adelaidean faunas. Hedley admits, in the former, four species brazieri, coccoradiatum, hargravesi, and naevosum, while in the Victorian List appear albicans, conicopora, cyclobates, emmae, and naevosa, Verco adding, in South Australia, roei and tricostalis, noting that the correct name of the latter may be scalaris (which it is) and that emmae may only be a variant thereof. Roy Bell secured all the four N.S.W. species at Twofold Bay, naevosum alive and the other three dead, the rare ones in dredgings, while he also sent from Tellaburga I., Vic., specimens of *coccoradiatum*, an addition to the Victorian List. From Port Fairy, Vic., he sent a fine series of the so-called naevosum, emmae and albicans, all living: the *naevosum* are easily separated from typical Sydney shells by their more elongate shape, less tightly coiled and higher spire, showing the whorling inside, and probably larger size and stronger sculpture. I propose to differentiate these as Haliotis naevosum improbulum, n. subsp. Another correction may be here made: Haliotis laevigata was given to a beautiful figure published in Rees' Encyclopaedia. The plate was published on 1 Nov., 1808, on Pl. vi., of the Conchological series, and the author was Donovan. This has never been recorded previously, but the shell figured is undoubtedly H. albicante of Quoy and Gaimard, whose name is a quarter of a century later. It may be noted that Peron mentioned a Haliotis gigantea from D'Entrecasteaux Channel, Tasmania; no description was offered, but apparently this was given to the southern Tasmanian form of *H. naevosum* Martyn, which is, in shape, like the Sydney form and differs from the Port Fairy series, while in sculpture it can be separated from typical H. naevosum in lacking the pronounced radial striation and in its larger size. It will bear the name Haliotis naevosum tubiferum Lamarck (Hist. Anim. s. Verteb., Vol. vi., pt. 2, 1822, p. 214), described from New Holland, probably from one of Peron's shells. Lamarck cited "Chemnitz 10, t. 167, f. 1610-11 and Martyn 2, f. 63." In the first place Chemnitz figured a Japanese shell from Spengler's collection confusing it with the species found in New Holland and figured by Martyn from New South Wales as naevosum. When Hedley revived Peron's name of Haliotis cyclobates for excavata Lam., he observed "At Kangaroo Island, a Haliotis whose perforations project so as to form open truncated cones, Peron named H. conicopora. This answers to the H. tubifera of Lamarck, which has been referred to H. naevosa Martyn, but which may perhaps be H. granti Pritchard and Gatliff." In making this identification, Hedley overlooked the data given by Lamarck for his H. tubifera, viz., "maxima five inches 10 lines long by 4 inches broad." This does not agree with conicopora, which is probably emmae, a form of tricostalis = scalaris, over which names Peron's name has priority. The size of Lamarck's tubifera agrees with the southern Tasmanian shell, the name recorded by Peron being the same as that of Chemnitz, and the figure of Martyn agreeing generally. J. E. Gray (Proc. Zool. Soc. Lond., 1856 (11 Nov.), p. 148) introduced a new generic and specific name, Schismotis excisa, for a specimen

ligured on Moll., Pl. xxxiv., which he afterwards concluded was a monstrosity of *Haliotis albicans*. This name seems to have been overlooked, and is available for this peculiar species when separation is desired.

(395) STOMATELLA IMBRICATA Lamarck, 1816.

The introduction of the specific name is correctly given, but a later one is eited for the generic, a quotation which needs correction, as both were first proposed at the same entry. I have been unable to detect any constant differences in the shells referred to this species from different localities, mainly on account of their variability.

As the generic name *Tliboconus* Peron is sometimes quoted as a synonym, I give here the extract and quotation which should read, "*Tliboconus* Blainville, Dict. Sci. Nat. (Levrault), Vol. liv., p. 467, 1829. "Tlibocone. *Tliboconus* (Conchyl). This name I have found on a shell in the Coll. Mus. Paris, naming a genus made by Peron. This shell has passed, I believe, into the genus *Stomatella* of Lamarck." Lamarck's description and figure were probably based on Peron's examples, and the locality given, "Java," false, the shells being collected in southern Australia, probably south-western Australia.

(396) GENA STRIGOSA A. Adams, 1851.

Recently Hedley has given some detail of the animal of the Sydney Gena, and has accepted A. Adams's name, as I had compared for him Sydney specimens with A. Adams's types in the British Museum. He did not discuss the Victorian form, for which Pritchard and Gatliff had used the name Gena nigra ex Quoy and Gaimard, and quoted A. Adams's name as synonymous. Specimens from Port Fairy, Vic., sent by Roy Bell, differed a little from the Twofold Bay shells, which agreed with Sydney shells I had collected some years before. The Victorian shells are absolutely larger, a little differently shaped and with generally coarser sculpture. Inasmuch as the two forms have been continually regarded as distinct, these differences may be emphasised, but the nomination is a matter Lamarck named and figured Stomatella auricula (Tabl. Ency. of difficulty. Method, 1816, Liste, p. 10, Pl. 450, figs. 1a-b). In the Hist. Anim. s. Verteb., Vol. vi., pt. 2, Apl., 1822, p. 210, Patella lutea Lin. Gmel., p. 3710, No. 94, was synonymised and three references to Rumph., Favaune and Martini added, the locality being given as "Habite l'Ocean des Moluques et de la Nouvelle Hollande." Although Hedley admitted nigra Quoy and Gaimard in his Western Australian List, he has since received specimens from the Pacific Islands, now in the Australian Museum, exactly agreeing with the description, by Quoy and Gaimard, of a Tonga Tabu shell, and now eliminates the name from Australian usage, a conclusion I had arrived at from study of the British Museum collection. Further, he had determined specimens from Kangaroo Island as Lamarck's auricula, and in this determination I was inclined to agree when I met with Quoy and Gaimard's statement in the Voy. de l'Astrol., Vol. iii., p. 309, which absolutely clinched the matter, viz., "Stomatella auricula Lam. Nous avons constaté que nos individus provenaient du meme lieu que celui qui est au Muséum, et qui Peron avait rapporté du port du Roi Georges, à la Nouvelle Hollande." On this evidence we can accept Lamarck's name for the Western Australian shell which ranges along the Adelaidean Region as far as Port Fairy, Vic.

The earliest recognisable name for the eastern Australian shell seems to have been overlooked, viz., *Haliotis impertusa* Burrows (Elements of Conchology, 1815, p. 162, Pl. xxi., fig. 2): no locality given, but probably Port Jackson, as Burrows had shells from that locality. The figure and description are good and are easily. matched by a shell from any day's collecting in this locality.

(398-436) Family TROCHIDAE.

Probably only second in interest to the family Fissurellidae, Trochoids, on account of the simplicity of their shell formation, present more difficulty, but still are delightful on account of their littoral habit and their rapid alteration as they descend into deeper water. In the two Regions here contrasted, the Peronian and Adelaidean, the species continually represent each other, and only in a few instances does the same species occur in both regions unchanged, and then usually only in the territory adjacent. Consequently, it is comparatively easy to indicate errors such as the admission of *Clanculus maugeri* Wood into the Victorian and Tasmanian Lists, this being a northern Peronian species which apparently does not travel so far south.

(403) CLANCULUS OMALOMPHALUS (A. Adams, 1853).

In the Proc. Zool. Soc. Lond., 1851, not published until 1853, A. Adams named numerous species of Trochoids, generally without definite, or else inaccurate, locality. The name *C. omalomphalus* has been used because it was noted that it had been collected at Sydney by Strange. On the previous page, he had described *Clanculus brunneus* from an unknown locality, and Mr. J. R. Le B. Tomlin finds, from examination of the types in the British Museum, that these are the same species.

This species, along with C. floridus Philippi (No. 401), was sent from Tellaburga Island, Vic., and they are additions to the Victorian List. From the series' sent from Port Fairy, Vic., C. flagellatus Philippi appears to be the Adelaidean representative of C. floridus Philippi, while C. limbatus Quoy and Gaimard replaces C. brunneus A. Adams as above. These Adelaidean shells, according to May's Illustr. Index Tasm. Shells, 1923, Pl. xviii., occur on the eastern coast of Tasmania, a record which is suggestive that the Peronian Trochoids do not occur in the Mangean Region.

(404) CLANCULUS PLEBEJUS (Philippi, 1851).

This species is very puzzling, specifically and generically. To deal with the latter item first, the species has been classed in *Clanculus* and also in *Gibbula*, two very distinct groups, and now Hedley has transferred it to *Eurytrochus*. The false umbilicus, with the columella joining on the outside, differentiates it from all the above, but, as it seems to approach the first-named genus, I propose to separate it with the new generic name *Mesoclanculus*. Hedley recently added it to the N.S.W. List from Montagu Island, a little north of Twofold Bay, but Angas had included it from Port Jackson as *Clanculus nodoliratus* A. Adams. The latter name was proposed in the same year as Philippi's, but not published until two years afterward.

Philippi's description and figure do not fit the New South Wales shells (which I have found on the Sydney beaches), but are quite good for the Western Australian form, which appears common. From Port Fairy, Vie., Roy Bell sentit as a very common species, very variable in size. There appears to be a series of names for the eastern shell, as Tenison-Woods is credited with two, *Clanculus angeli* and *Gibbula multicarinata*, described in the same paper (Proc. Roy. Soc.

Tasm., 1876, pp. 144 and 142), the last-named having priority. Then A. Adams's name would need consideration, but the selected epithet is not well applicable to the eastern shell. Fischer (Coquilles Vivants, 1880, Trochus, p. 243. Hab ?) separated a small form as *Trochus muscarius*, and the description agrees with the smaller shells found at Port Fairy, Vic. and the Peronian shells so far examined.

Pilsbry (Man. Conch., Vol. xi., 1889, pp. 80-81) writes, "To this (typical) form Dr. Fischer gave the mss. name *T. muscarius*, which he considers as var. B. of *plebejus*. . . . In the Academy collection (shells) are marked *C. rubicundus* Mighels: but I have seen no description of such a species by that author." I do not consider Fischer's *muscarius* typical of *plebejus*, but would note *C. rubicundus* (Mighels) Pilsbry in the synonymy of *plebejus*. Later, in the same volume, Pilsbry suggested (p. 467) that *C. rubicundus* Dunker was perhaps intended.

(409) CANTHARIDUS FASCIATUS (Menke, 1830).

Three very different species have been included by Hedley in the genus *Cantharidus*, each of which has been long allotted a separate name. The first, No. 408, *Cantharidus eximius* (Perry, 1811) may be allowed to represent that genus, very little difference being seen between it (the type of *Phasianotrochus*) and the Neozelanic type of *Cantharidus (opalus Martyn)*. The present species, the type of *Bankivia*, a MS. name by Beck, apparently first published by Krauss (Die Sudafr. Mollusk., Jan., 1848, p. 105, Pl. vi., f. 7) by monotypy, should be absolutely separated, although at present a monotypic genus. The radula is quite peculiar and recognisable at sight among these Trochoid forms.

(410) CANTHARIDUS LINEOLARIS Gould, 1861. (Plate xxxvi., figs. 1-2, 17).

This is the monotype of Leiopyrga H. and A. Adams (Ann. Mag. Nat. Hist., 3 Ser., Vol. xii., 1863, p. 19), a genus which should be recognised. The extreme variability of the species is seen in the hundreds of specimens now before me. All were dredged alive on grass beds (Zostera) in the Bay, in from 5 to 10 fathoms of water. This species commonly shows a peripheral keel and specimens (immature) are found agreeing exactly with the type, figured by Hedley, of A. Adams's cingulata. I had intended to suppress that species as synonymic, but, fortunately, found two tablets in the British Museum, one from Sandy Cape, N. Queensland, and the other from Port Essington, Northern Territory, which showed that the northern species was permanently smaller and constantly keeled. Among the hundreds from Twofold Bay shallow water dredgings I found half a dozen specimens showing the whole of the whorls strongly spirally lirate, suggesting Tate's octona, and it seems doubtful whether these are stragglers from the Adelaidean Region or merely aberrations. Though only a few specimens were found in a dredging made off Gabo Island in Victorian waters, yet one was of the octona type. Under these circumstances, it seems wise to accept three species, quite representative, but probably entering each other's regions at the point of junction. Verco, from a study of South Australian shells, was fain to conclude that octona was no more than a validly spirally lirate variety of the Sydney species. As the variation seen in the Twofold Bay series is very great, it is possible that the fossils described by Tate (Trans. Roy. Soc. S. Aust., xiv., Dec., 1891, p. 261), as Leiopyrga quadricingulata and L. sayceana may prove synonymous with each other or else inhabit different horizons.

The reference to Leiopyrga octona Tate is as above (p. 260, Pl. 11, f. 5), two

examples, one from Royston Head, S. Yorke Peninsula, the other from King George Sound: this species should be added to the New South Wales fauna, protem., as I also find specimens from Sydney Harbour in the Australian Museum, separated from the smooth shells, which also oecur there. I, therefore, name the Peronian form *Leiopyrga octona problematica*, n. subsp., type from Twofold Bay.

(415) CALLIOTROCHUS COXI (Angas, 1867).

The shell named Gibbula coxi Angas bears a superficial resemblance to the European Gibbula, but has little real relationship, and I propose the new generic name Notogibbula, with this species as type. J. R. Le B. Tomlin, while arranging the Trochoid shells in the British Museum, noted that this species had been previously described by A. Adams as Stomatella bicarinata A. Adams (Thes. Conch., Vol. ii. (pt. 15), 1854, p. 839, Pl. 175, figs. 39-40), from Moreton Bay, Australia, the types being preserved in the Mus. Cuming. An alternative reference is to the Proc. Zool. Soc. Lond., 1853 (25 July, 1854), p. 74. The Western Australian G. preissianus Philippi, recently placed in Gibbula, e.g., by Pritchard and Gatliff, and classed under Monilea, subgen. Minolia by Pilsbry, appears congeneric. Hedley has recently proposed to transfer lehmanni Menke (= preissianus Phil.) and bicarinata Adams (= coxi Angas) from Gibbula to Minolia, but, as I show later, they would not be settled in that genus.

(416) CALLIOTROCHUS TASMANICUS (Petterd, 1879).

When Hedley and May described *Gibbula galbina* (Rec. Aust. Mus. vii., 11 Sept., 1908, p. 114, Pl. xxii., f. 2) from 100 fathoms off Cape Pillar, Tasmania, they observed that this was the species recorded as *G. tasmanica* from the *Thetis* results, in 63-75 fathoms off Port Kembla, N.S.W.

Apparently C. galbina must be added to the N.S.W. List, as G. tasmanica Petterd, according to the British Museum, occurs as far north as Port Jackson. In any case, similar shells occur in the shallow water dredgings from Twofold Bay. Calliotrochus was proposed for Turbo phasianellus Deshayes, a form quite peculiar. of which the Mauritius form is almost indistinguishable from the New Caledonian one conchologically, but my Lord Howe series are easily separable from the Norfolk Island one, and the genus also occurs at the Sandwich Islands. The radular features of this genus are very peculiar and distinct, so that members of the genus can be easily exactly determined.

(416 A) MINOPA LEGRANDI (Petterd, 1879).

Petterd (Journ. Conch. (Leeds), ii., 1879, p. 104), described Fossarina legrandi from northern Tasmania, and Pritchard and Gatliff recorded it as "a rather common little species widely distributed along our coast," transferring it to the genus Gibbula, and simultaneously, Tate and Mav figured it, also placing it in the genus Gibbula. From Tate and May's good illustration it was easily recognised as common in the shell-sand sent from Port Fairy, Vic., by Rov Bell. Later a few were picked out of shell-grit sent from Twofold Bay. N.S.W., so that it seems a new record for the latter State. Owing to the generic soliting now necessary, this form requires a new location, and I therefore propose Minopa, citing this species as type.

I have noted about *Calliotrochus*, and hope that the radula of this species will

soon be examined, as well as that of the preceding. Until this is done the species *tasmanicus* may be classed in *Minopa*, but I do not think it will stay there.

(418-426) MONILEA and MINOLIA. (Plate XXXV., figs. 7-12).

Hedley refers to the former genus, angulata, lentiginosa, oleacea, and vitiliginea, and to the latter arata, bellula, philippensis, pulcherrima and rosulenta. In Proc. Malac. Soc. Lond., xiii., Aug. 1918, p. 36, I drew attention to the invalidity of Monilea, and concluded that Talopia Gray, which first appeared in the Synops. Contents Brit. Mus. (of which I have given full details in the Proc. Malac. Soc. Lond., x., Mar., 1913, pp. 294-309), 42nd ed., p. 147, 1840, as a nomen nudum, and in the 44th ed., 1842, p. 57, with the following definition, "The Talopia are like the Rotella; the shell is striated and umbilicated, the umbilicus being edged with a striated callus edge," could be used from the next entry. Only the species lentiginosa of the above list would fall into Talopia, while Minolia was proposed for a species from Japanese seas having the conchological features seen in pulcherrima, and for the present pulcherrima, arata and rosulenta may be classed here. I had, from conchological features, separated the group like philippensis, when Lt.-Col. Peile, to whom I had given specimens to extract the radulae, informed me that the radula in this species was very peculiar. I therefore propose the new generic name Spectamen, and name Watson's Trochus philippensis as type (Plate xxxv., f. 11). The species bellula is so close to this, that it seems a geographical representative, but Hedley has recorded both from localities not very far apart.

From the description, oleacea represents still another distinct group, which I did not receive in these collections, but which Roy Bell dredged at Lord Howe Island, and which strongly recalls Umbonium. Since the preceding was written, consideration of radulae in the Gwatkin collection shows the radula of Talopia (callifera) to be distinctive, and that, of two slides labelled vitiligenea from South Australia, one shows a Trochoid radula unlike that of philippensis (Spectamen), but the other radula is different and is of the style peculiar to Umbonium, about which I hope to write more later. This latter radula appears to belong to the true vitiligenea, which from shell features is an Ethminolia. Machaeroplax was instituted by Friele for a northern shallow water Trochoid of simple character on account of the peculiar radular features. Later it was suppressed in favour of the earlier *Solariella*, proposed for a fossil species, not exactly agreeable even in shell characters. Minolia was named for a Japanese shallow water form, not much unlike in shell features, and has also been suppressed. In the northern "Solariella," two forms of radula are seen, the Machaeroplax style and a regular Trochoid form. The radula of Spectamen proves to be comparable with that of Machaeroplax, but I can see differences which decide me in favour of not using the northern name, especially as the shells differ. It is probable that the radula of Minolia (which is as yet unknown) will agree fairly closely in style with that of Spectamen, but the fact that the species known as angulata, very similar in shell character to the type of Spectamen, shows a very different radula, demands the use of analogy with extreme caution. The continuous distribution of the Minolioid shells decided me in my tentative use of that generic name.

(418) MONILEA ANGULATA (A. Adams, 1853).

This species was described from the Sandwich Islands and the name should not be used for a Sydney shell: *T. prodictus* Fischer is simply a new name for

Adams's angulata, and must be referred to that species, although Fischer used it for the Australian one. Monilea apicina Gould has nothing to do with the present form, although Hedley, at the quotation given, recognised a photo of the type sent by Dr. Bartsch, as of this species. It should be recorded that Gould brought his shells to London for comparison with the Cuming collection, and that he gave to Cuming typical specimens of his species, and that, upon his return, his shells were lost and mislaid, and probably the most authentic representatives of his species are the shells in the Cuming collection, now in the British Museum. In the present instance, there is a specimen labelled "Monilea apicina Gould," with reference and locality, and this is obviously not even congeneric in a broad sense with the shells referred to Adams's species. Reference to the original description shows this shell to be typical, and I only quote the following items "Testa ovato-conica . . . basi convexo, lineis incrementi nonnihil granulatis: umbilico minuto, costâ callosâ marginali et alterâ interiori eineto," as showing the attachment of the species to Adams's angulata to be quite inaccurate. I was fortunate in being able to recognise, in Gould's species, the Lifu shell described as Minolia agapeta by Melvill and Standen, and probably the locality, "Port Jackson, W.S.," is wrong.

The use of Adams's name seems to depend upon a tradition now lost. Fischer figured a Sydney shell as *prodictus*, his unnecessary substitute for *angulata*, but I have been unable to trace Adams's type shells and here give the latter's description: "M. testa orbiculato-conica, late umbilicata, albida, fusco variegata; anfractibus supra angulatis, transversim omnino striatis; basi convexa, concentrice striato, umbilico magno perspectivo."

This description is very vague and may easily apply to a Sandwich Islands' species. In the Museum Godeffroy Cat., iv., 1869 (p. 102), there were offered for sale specimens of *Margarita angulata* A. Adams from the Sandwich Islands, and as I have been unable to trace any authentic specimens to throw light upon the subject, either to discredit the named locality or to legitimatise the adopted one, I here describe the shell from Twofold Bay, N.S.W., as a new species. This is the more necessary, as I have also to provide for it a new generic name, as examination of the radula proves it to differ essentially from that of *philippensis*, with which I had tentatively classed it from shell features, and is of the style termed Umbonioid. I here propose to describe the species (known as *angulata* A. Adams) as

ETHMINOLIA PROBABILIS, n. gen. et sp. (Plate xxxv., figs. 7-9).

Shell depressedly trochoid in shape, widely umbilicate, texture thin, whorls medially angulate, and with strong square shoulder.

Colour variable, of shades of brown with white spots and blotches irregularly placed, but sometimes whitish with regular brown rays of various widths. The apical whorls are minute, white and smooth; the adult whorls are sculptured with dense fine transverse lines, rarely, on the shoulder, one or two stronger than the rest. Umbilicus perspective exposing all the whorls, the edges neither crenulate nor angulate, though growth lines can be noted on the base. Mouth sub-quadrate, outer lip thin, columella simple, a little convex, but bearing no tooth, nor is the mouth complete or detached. Operculum circular, horny, multispiral. Radula, resembling that of *Ethalia*, with degenerate rhachidian and laterals, and with marginals of a rather normal rhipidoglossate form. Breadth $7\frac{1}{2}$; height 4 mm.

Common in shallow water dredgings at Twofold Bay, N.S.W.

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(425) MINOLIA PULCHERRIMA Angas, 1869.

Roy Bell dredged many beautiful specimens in Twofold Bay in 10-25 fathons, and these agreed with shells so named in the British Museum, but not so clearly with the description and figure. The radula was extracted from such shells by Lieut.-Col. Peile, and reported upon (Proc. Malac. Soc.-Lond., xv., 1922, p. 17), under Angas's name. The radula agrees fairly closely with that of *M. philippensis* Watson, whose shell differs. As discussed above, I propose to retain the name *Minolia* for shells like *pulcherrima* for the present. However, in the Australian Museum Collection I found shells from Middle Harbour, Sydney, which agreed exactly with Angas's description and figure. The deeper water Twofold Bay shell, which I propose to name *Minolia pulcherrima emendata*, n. subsp. (Plate xxxv., f. 12), differs in being smaller, with the encircling lirae more regular and closer together, so that the whorls show no shouldering, and the two prominent keels of the type are missing. In view of the complexity of the relationship of the species, this may hereafter prove of specific value.

(429) CALLIOSTOMA DECORATUM (Philippi, 1846).

This species was introduced as *Trochus decoratus*, and previously *Trochus decoratus* had been used by Hehl (C. H. v. Zieten, Petref. Wurtt. (6), 1832, p. 46).

When Hedley selected the above name (These Proc., xxvi., 1901, p. 19) he ranged as synonyms, *Trochus fragum* Philippi, *T. pyrgos* Philippi and *Thalotia zebrides* A. Adams. In his more recent W.A. List, he has admitted as a distinct species *Cantharidus pyrgos* Philippi, citing as synonym, *C. moniliger* A. Adams. This appears to leave Philippi's *fragum* as the species name (the reference being Zeitschr. fur Malak., 1848 (Feb., 1849), p. 106. Loc. unk.) while *Thalotia zebrides* A. Adams, from study of the types, has nothing to do with this species. Nevertheless, I cannot see why this species should not be classed in *Thalotia*, as it is not a *Calliostoma* commonly so-called. The radula of *Thalotia* is quite different from that of *Calliostoma*.

(430 A) CALLIOSTOMA LEGRANDI (Ten.-Woods, 1876).

Zizyphinus legrandi Tenison-Woods, Papers and Proc. Roy. Soc. Tasm., 1875 (1876), p. 154: Chappell Island, Bass Straits.

Specimens of this species from Twofold Bay appear to be a new record for New South Wales. With it, among the deep water dredgings, was an odd specimen of another species, also lacking nodules, but of the shape of *C. comptus* A. Adams, which was also sent from Twofold Bay. In the Victorian List, Pritchard and Gatliff used *poupineli* Montrouzier for *comptus* A. Adams, and when Hedley recently acknowledged that A. Adams's species was his Sydney *purpureocinctum*, he stated he had not seen Montrouzier's species. In the British Museum there are now shells from New Caledonia, identified as *poupineli*, and these agree with Montrouzier's description, and also with Fischer's figure, and are easily separated from the Australian form, even as Brazier determined years ago from examination of New Caledonian shells.

(430 B) CALLIOSTOMA ALLPORTI (Ten.-Woods, 1876).

Zizyphinus allporti Ten.-Woods, Proc. Roy. Soc. Tasm., 1875 (1876), p. 155: Bass Straits, Tasmania.

This species is also an addition to the N.S.W. List, and Lt.-Col. Peile, who

has examined the radulae of the Austral species in the Gwatkin Collection, now in the British Museum, informs me, as I suspected, that these show notable differences from those of the Northern forms, the true *Calliostoma*, and also, as in the Palaearctic, the small forms are separable from the large similarly-named species.

I, therefore, propose the new genus Salsipotens, naming Trochus armillatus Wood as type, and Fautor for the small species, naming Z. comptus A. Ad. (= C. purpureocinctum Hedley) as type.

A lovely species, occurring in Victoria and Tasmania, but not found by Bell in N.S.W., is *Trochus nobilis* (Philippi, Conch. Cab., ii., pp. 86 and 255, Pl. 15, f. 6, and Pl. 38, f. 1, from Western Australia) figured by May in his Illustr. Index Tas. Shells, 1923, Pl. xix., f. 19, from King Island. The specific name had been previously chosen by Muenster (N. Jahrb. fur Min., 1835, p. 443) but there is a substitute, *T. rubiginosus* Valenciennes.

(431) ASTELE SCITULUS (A. Adams, 1855).

This common Sydney shell was sent from Twofold Bay, N.S.W., and also from Mallacoota and Tellaburga Island, Vic. With it from Mallacoota came a specimen of *Astele subcarinata* Swainson, the type of the genus, and this showed that the present species could not be regarded as congeneric, the formation of the umbilicus, the only common character, being of a different nature. From the apical features, it suggests somewhat a loosely coiled form of the "Calliostoma" series, and I propose the new generic name Astelena for this species.

It is not uncommon at Mallacoota, Vic., and appears to be an addition to the Victorian List, while, on the other hand, true *Astele* will later be found inside the New South Wales limits, as I received it from Mallacoota. The radula of *scitulus* is separable from that of *subcarinatus*, the type of *Astele*.

(434) EUCHELUS BACCATUS (Menke, 1843).

This species, introduced as a *Monodonta*, does not agree with the type of *Euchelus*, which is the tropical *atratus* Gmel. (a shell I collected at Port Curtis, Queensland), in umbilical, columellar and opercular features. It would be better placed in *Herpetopoma* proposed by Pilsbry (Man. Conch., Vol. xi. (pt. 44), Mar., 1890, p. 430), for Angas's *scabriusculus*, which was described as "umbilicated," but the type series show that feature to be very indistinct.

Menke called the present species *Monodonta baccata*, and that combination had been previously introduced by Defrance (Dict. Sci. Nat. (Levrault), Vol. xxxii., 1824, p. 475), for a Paris fossil.

The next synonym is *Trochus aspersus* Philippi (Zeitschr. fur Malak., iii., July, 1846, p. 103), as of Koch, from unknown locality. The radula of *scabrius-culus* is separable from that of *atratus*, but both belong to the same group, and are distinguishable from *Clanculus*.

(437) PHASIANELLA PERDIX Wood, 1828.

In the Vict. Nat., xxxi., 10 Sept., 1914, p. 82, Gatliff and Gabriel superseded the well-known *Phasianella ventricosa* Quoy and Gaimard, 1834, by *P. perdix* Wood, 1828, which was chronologically correct, and has been accepted by Hedley in his Check List.

It has been overlooked, that, in the Appendix to the Cat. Coll. Shells Bligh, Swainson had described this species twice, first under the name *P. ventricosa*,

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which can be therefore preserved, and then as *P. inflata.* As usual with Swainson's work, there is confusion at every stage, and we see on the first page of the Catalogue, Errata, and therein occur: "Lot 140 for *Ventricosa* read *inflata*" and "Lot 285 for obtusa read ventricosa." On p. 12 is written, "Lot 140, *Phasianella ventricosa* Swainson, a beautiful variety of this new species, see Appendix" and p. 19, "Lot 285, *Phasianella obtusa* Sw., (see Appendix) from N.S. Wales, large" and on p. 55, "Lot 967, scaree variety of *Phasianella ventricosa* Sw. (see Appendix). New Holland." The Appendix is separately paged, and on p. 15 *Phasianella ventricosa*, Lots 285 and 967, is described, and on p. 16 *Phasianella inflata*, Lot 140, is also characterised. Both these descriptions apply, and the locality New South Wales may mean Victoria, as at that time the latter was not separated and all eastern Australia was known as New South Wales. As the Sale of Bligh's Collection took place on May 20 to 26 inclusive in the year 1822, the Catalogue was published prior to May 20, 1822.

In connection with the Phasianellids sent by Roy Bell from Port Fairy and Mallacoota, Vic., and Twofold Bay, N.S.W., I had to refer to the Man. Conch. (Tryon), and here give some notes taken in this connection. The Phasianellids were monographed by Pilsbry in Vol. x., pt. 2 (reed. B.M., 18 July, 1888), and he gave details of the radulae: on p. 163 he described the peculiar radula of the type species (of *Tricolia*) *P. speciosa* and then introduced *Orthomesus*, noting that the typical species was *P. variegata*, and adding "In *P. virgo* Angas (Pl. 60, fig. 70) I have found an extremely peculiar and interesting modification of the *Orthomesus* type of dentition." On p. 179, he formally named "Subgenus *Orthomesus*. Shell and operculum similar to *Phasianella*: radula with the central tooth reduced to a minute rudiment or absent. Type, *P. variegata* Lam."

However, as the range of P. variegata he gave "Zanzibar, Red Sea, New Caledonia, Mauritius, etc.," and cited numerous synonyms, concluding with "and The latter I cannot identify; but, judging from Philippi's P. rubens Lam. description and figure (Pl. 39a, figs. 6-7), of what he supposes to be Lamarck's species, and from Kiener's (Pl. 38, figs. 47, 48) I would place it in the synonymy of P. variegata. Philippi gives Australia as the locality of P. rubens." Such treatment is difficult to understand in view of the facts. Phasianella rubens was described by Lamarek in the Hist. Anim. s. Vert., Vol. vii., pt. i., 1822, p. 53, from "Nouvelle Hollande; coll. by Peron," and a figure cited "Encylop., Pl. 119, f. 2a, b." The description is succeeded by that of P. variegata, where no figure is cited, and agrees with the shell known by the latter name. A List explanatory to the Encylop. plates was published in 1816, but no specific name was given to the figure eited. While the Twofold Bay shells seem to be a form of ventricosa, I collected at Caloundra, Queensland, commonly, a form which agrees more closely with rubens, and this should occur in Northern New South Wales, probably as far south as Sydney. I have noted that there appears to be geographical variation when these shells are examined in numbers. A form, like variegata, occurred at Port Fairy, Vic., which agreed with Crosse's P. angasi from South Australia, and this reached as far east as Mallacoota, but I did not get any from New South Wales, though it may occur there.

Hedley has placed this genus in the Family Turbinidae, but from the radular characters it deserves family rank, and perhaps later many genera may be recognised.

The shells found on the Sydney beaches, I find to differ a little from the Caloundra ones, and to agree closely with the typical *rubens*, while true Lamarckian *variegata*, judging from the figures given by Delessert (Recueil Coquilles

Lamarck, 1841, Pl. 37, figs. 10a-b) is a slenderer form like Crosse's *angasi* (Journ, de Conch., 1864, p. 344, Pl. xiii., fig. 5) and Lamarck's name is used in this sense in May's Illus. Index Tasm. Shells, 1923, Pl. xx., f. 5, and Check List Moll. Tasm., 1922, p. 41.

Shells from Twofold Bay are *ventricosa*, and the species reaches as far north as the Sydney beaches. As an item of interest this species (*ventricosa*) was irregularly named by Perry, as when he figured *Bulimus phasianus* (Conchology, 1811, Pl. xxx.), he observed "There is also a smaller species of the *Bulimus phasianus*, the pattern or marks of which are exactly similar to the one here represented, though its shell is rather thicker: it may therefore be denominated the *Bulimus phasianus minimus* of the before-mentioned genus." This name is not acceptable, but the solidity of the shell indicates the species here discussed.

When Pilsbry introduced Orthomesus, he figured, as the radula of P. australis, that given by Eberhard, noting it required confirmation. Claude Torr (Trans. Roy. Soc. S. Aust., xxxviii., 1914. p. 364, Pl. xix., figs. 5a-b) has since figured a radula from P. australis, noting the formula as α , 5, 1, 5, α x 38, explaining that the central tooth was narrow and inconspicuous. This was annoying, as suggesting that Pilsbry's Orthomesus must be regarded as an absolute synonym of Phasianella, but did not explain Eberhard's figure of a large broad rhachidian tooth. This indicates that P. ventricosa of this note is the aberrant form, which conchologically it is, and in order to renew interest, I propose for it the new sub-generic name Mimelenchus, noting Quoy and Gaimard's expression as typical.

The fact that the radula of *Tricolia* differs so much from true *Phasianella* has been overlooked, and the recognition of a radula like that of *Orthomesus* i.e. *Phasianella* (sensu stricto), in *P. virgo* Angas shows that the small Australian Phasianellae have no direct relationship with the European *Tricolia*. of which the correct name would be *Eutropia* Humphrey, the only recognisable species included by Humphrey being the European *Turbo* pullus Linné.

(444) ASTRAEA FIMBRIATA Lamarck, 1822.

The two species distinguished by Kesteven (These Proc., xxvii., 1902, p. 2) occurred, and both the names used by Kesteven and listed by Hedley must be amended. Their nomination is somewhat complex and the conclusions must be earefully considered. Both species occur in Victoria and northern Tasmania, and are represented in Western Australia, these representatives being named many times, but apparently few names being given to the eastern shells. Gatliff and Gabriel, and May both use the above name, but unfortunately Lamarck's specific name, while it also probably is Western Australian, was used before by Borson.

The generally-accepted synonym, *Trochus squamiferus* Koch, published by Philippi, was given to a Western Australian shell, and of three others sometimes cited in this connection, *Trochus pileolum* Reeve, *Trochus limbiferus* Kiener, and *Trochus cucullatus* Kiener, none is applicable to the common Sydney shell. I propose to name this *Bellastraea kesteveni*, eiting it as type of *Bellastraea*, as the species is not typical *Astraea*, and has no generic name.

For the other species Kesteven used the name *tentoriiformis* Jonas, but Hedley has recently rejected this on account of its Western Australian origin, and has preferred Gould's name *Turbo* (*Stella*) sirius, given to a Sydney specimen, collected by W. Stimpson. I would at present include it in the genus *Bellastraea*, the early development showing discrepancy which may necessitate a readjustment.

Quoy and Gaimard differentiated the two species as varieties only, figuring both under Lamarck's name of *fimbriatus*, and Philippi (Conch. Cab. (Kuster)

Vol. ii., Trochus, p. 215, 1852, Pl. 32, fig. 4) reproduced Quoy's figure of his variety and distinguished it as *T. urvillei*. Quoy and Gaimard figured an animal from Port Jackson, and others, including shells from King George Sound, W.A. Kiener (Coquilles Vivants, Trochus, Pl. 31, f. 2) reproduced Quoy's figure of the above-mentioned variety under Quoy's MSS, name of *Trochus georgianus*, thereby indicating the locality. Consequently *Trochus urvillei* Philippi, and *T. georgianus* (Quoy) Kiener, must be classed as synonymous of *T. tentoriiformis* Jonas, even as Fischer in the text of the Coquilles Vivants (p. 41, 1875) placed georgianus.

(448) TEINOSTOMA STARKEYAE Hedley, 1899.

This species seems no close relation to the genus Teinostoma, which was first published by H. and A. Adams in the Genera of Recent Mollusca, Vol. i., Aug., 1853, p. 122, and the example given T. politum. This has commonly been regarded as type, and is here definitely so designated, since it was the monotype at the later publication at the quotation given by Hedley. I propose to introduce the new name *Stipator* and name the species T. *starkeyae* as type. It does not seem at all wise to attach these Austral species to a name provided by Dall for American fossils, which, moreover, do not recall, to my eyes, the Australian shells.

Moreover, peculiar Teinostomoid shells do occur in this region, and Chapman and Gabriel have described a fossil as *Teinostoma depressulum*, which, while not typical, has many of the peculiar features of the true *Teinostoma*, while Tate's *Ethalia cancellata* is also of a peculiar style, and specimens of this, or a very closely allied, species are not uncommon in shell-sand round Sydney.

(463) LODDERIA MINIMA (Ten.-Woods, 1878).

This species, proposed under *Liotia*, has been transferred to *Lodderia*, but it should be separated as a distinct genus with the name *Lodderena*, with this species as type. I propose this, as I have recognised the form, specifically distinet, from distant localities and it seems quite peculiar. I also believe that under this specific name more than one species in Australia is already referred to, as until actual comparison was made, my discoveries were regarded as conspecific, and the same remark applies to *Lodderia lodderae* and *Liotia micans*. In the latter case I have proved by actual comparison that the Port Curtis shell is quite different from the Mallacoota one, though both had been lumped by Tate, after examination; another case of generic relationship being mistaken for specific identity.

(480-484) Family ACMAEIDAE.

Roy Bell sent me a magnificent series of these things, well collected and with full data, from every locality. I worked these out very carefully in connection with the British Museum types and literature, and made many notes for future research in the field. I am now taking my own advice, so here only deal with the facts I collated. I have incorporated some of my results, and may here note that the distribution of species in this family needs careful consideration, and that my results have been checked at different localities within and without the Harbour, and with attention paid to the station of life these forms adopt. When hundreds are critically examined the individual variation can be grasped and the geographical variation can be determined. Local variation also occurs, as well as environmental, and all these factors have been considered in the notes here following.

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS,

(480) PATELLOIDA ALTICOSTATA (Angas, 1865).

The type locality of Angas's species is Port Lincoln, S. Aust. Accepting the Port Fairy series as being nearly typical shells, the New South Wales form seems separable, the former agreeing very closely with the type shell still preserved in the British Museum. A very large specimen taken at Port Fairy is very tall and with the ribs flattened so that the edge is smoothish, and measures 57 mm. long by 47 mm. broad and 25 mm. high. Verce has given full details of this South Australian shell, which begins as a somewhat flattened, nine-pointed, acutely ribbed shell, and intercalating ribs begin behind the apex. All the Peronian shells I have examined from Sydney Harbour and Twofold Bay, N.S.W., Mallacoota, Lakes Entrance and Melbourne Heads, Vic., are much smaller, the ribs more regular and less prominent and for the same size more elevated. In order to draw attention to this item, I propose to name the Peronian form *Patelloida alticostata antelia* nov.

Maplestone (Monthly Micros. Journal, 1 Aug., 1872) has given (on Pl. xxvii.) under "Patella, No. 25," a good figure of the peculiar radula form of this species.

Since the preceding was written, I have carefully studied this species on the Sydney beaches, and find that the variation is much greater than anticipated from museum study, but that the factors above indicated exist in an intensified state; moreover, that the species is developing two forms, at times very different and even apparently specifically distinct. This smooth form lives *below* low water, and is flattened, the ribs obsolescent, and it is now breeding true to the specialised characters, series being collected from young to old, quite constant. I have as yet seen nothing like this form from any southern locality so I name it *Patelloida alticostata complanata* n. subsp. This smooth form is not uncommon as a dēad shell, but has been dismissed as a worn form, whereas it is naturally smooth.

(481) PATELLOIDA MIXTA (Reeve, 1855).

When Hedley recommended the use of this name he did not discuss the forms, but apparently admitted the distinction of *mixta* and *crucis*, though not including the latter in the N.S.W. List.

The name was preferred, as Hedley suggested the rejection of Quoy and Gaimard's Patelloida flammea on the ground that it was a mixture. Unfortunately, I cannot agree as, though Quoy and Gaimard figured two species, their statement, "Il habite en abondance sur le bord de la mer, dans la rade de Hobart-Town, à Van-Diémen. Nous le trouvâmes aussi sur l'ille (sic) de Guam, dans l'Archipel des Mariannes," indicates the selection of the Tasmanian shell as being the correct course. The sentence "tenuissime longitrorsum striata" seems to distinguish the Tasmanian shell, which I conclude has little, if any, affinity with mixta Reeve, and I note Verco's most recent conclusion, "A form like the type (of *flammea*) which I have from the Derwent estuary, the type locality, has not been found by me in South Australia. It is questionable whether this is really conspecific with A. jacksoniensis Reeve and A. crucis Tenison-Woods." I have regarded Quoy and Gaimard's *flammea* (from the description and figures and excellent series given me by Mr. W. L. May, who has retained the name in his Check List and Ill. Index Tasm. Shells) as the eastern representative of Quoy's own septiformis and it occurs as far north as Sydney Harbour. Reeve's mixta was described from Port Phillip, Vic., and Bell sent me a fine series from Port Fairy, but none from Twofold Bay, N.S.W. I collected, in Port Phillip, a good

lot of these, as I found they lived almost at high tide (where *petterdi* does at Sydney). Mr. W. L. May stated that the Tasmanian shell he called *mixta* had the same habit. Reeve's *jacksoniensis* is a different form of the same shell, and several sets were in the British Museum from Sydney Harbour, but I could not find it on the Sydney beaches. This perplexed me, until I found it commonly, well inside the Harbour on the dead shells and stones in the Mangrove zone. Although often confused with the *crucis* form, it has a distinct habit and belongs to a different group, and I propose to distinguish the Sydney form (Reeve's *jacksoniensis*, preoccupied) as Notoacmea mixta mimula, n. subsp.

(482) PATELLOIDA MUFRIA (Hedley, 1915).

This peculiar little species was recognised as dead shells from shell-sand from Twofold Bay. I have since collected it commonly on the Sydney beaches, and regard it as a specialised derivative of the *crucis* series, and therefore referable to *Radiacmea*.

(482 A) RADIACMEA INSIGNIS (Menke, 1843).

In These Proc. (xxxix., 1914 (26 Feb., 1915), p. 712), Hedley suggested the usage of Acmaea inradiata (Reeve, 1855, Patella) in place of Acmaea crucis Ten.-Woods, quoting my letter as to their identity. Unfortunately, closer examination of the (reputed) type tablet failed to recognise any of the three shells thereon, which proved to have been added at various times, as the specimen figured by Reeve, though two were typical crucis, and the third aberrant. Consequently inradiata must be rejected from this fauna. Menke's Patella insignis (Moll. Nov. Holl. Spec., 1843, p. 34) from Western Australia is undoubtedly the Western Australian representative of crucis, shells from Busselton and Albany agreeing with Menke's description, as amplified in the Zeitschr. für Malak., 10 Apr., 1844, p. 62. This species lives in Victoria, Tasmania and New South Wales, under different forms, at extreme low water on the rocks and in pools, and at Long Reef, near Manly, N.S.W., commonly on Turbo stamineus Martyn, living below low water. The southern Tasmanian form is very large and conical, while the N.S.W. form is small and less elevated. When adult, the sculpture is not easily seen, but dead shells and young living ones show it to be a Radiacmea, and I name the Sydney form Radiacmea insignis cavilla, n. subsp.

(483) PATELLOIDA PETTERDI (Ten.-Woods, 1877).

I find this to be the universal rock-living species on the Sydney beaches, living high up above high water, and thus representing the Neozelanic *P. pileopsis* Quoy and Gaimard, which it closely resembles. I collected it at Caloundra, Q'land, and Roy Bell found it at Mallacoota and Lakes Entrance, Vic., and it must therefore be added to the Victorian List, as it is not conspecifie with *P. septiformis* Quoy and Gaim. Roy Bell found at Port Fairy, Vic., a fine lot of the shell May has published (Illus. Index Tasm. Shells, 1923, Appendix to Pl. xxii., No. 3) with my name mayi. These species are Notoacmea, not Patelloida.

(483 A) NOTOACMEA FLAMMEA (Quoy and Gaimard, 1835).

As noted above. I regard this name as undoubtedly applicable to the species May has figured (Illustr. Index Tasm. Shells, 1923, Pl. xxii., f. 6) under this name. A very fine series was sent from Port Fairy, Vic., and these were determined from comparison with the types as *scabrilirata* Angas (Proc. Zool. Soc.

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS,

Lond., 1865, p. 154: Port Lincoln, South Australia), and this name may be later varietally used. Mr. W. L. May has given me specimens very similar that he collected at King Island. The juvenile of *P. septiformis* Quoy and Gaimard from King George Sound, W. Aust., is very similar, but the adult is very different Hedley has suggested (These Proc., xlviii., 1923, p. 309) that Menke's *P. onychitis* (Moll. Nov. Holl. Spec., 1843, p. 34) may be a synonym of septiformis, both being from Western Australia. *N. flammea* lives under stones near high water mark, and I have collected it at Port Fairy, Port Phillip, Western Port, Vie., and on the Sydney beaches; the Sydney form being smaller and more oval, may be called *Notoacmea flammea diminuta*, n. subsp.

(484) PATELLOIDA SUBUNDULATA (Angas, 1865).

This species was not recognised in the collection, but as Hedley included it in the N.S.W. List, though described from South Australia, I re-examined the types in the British Museum. I found two different sets, both labelled types, but noted they were all presented as one lot. In the description Angas referred to a "var." One shell has been separated as the specimen described and labelled type, and the others representing the "var," unfortunately also labelled type, thus misleading investigators. Two shells are in this second box, and one may be a *conoidea*, the other a *calamus*. Mr. Hedley tells me he left this species on the N.S.W. List on Angas's inclusion, but has not been able to verify it.

May (Illustr. Index Tasm. Shells, 1923, Pl. xxii., f. 11) has figured conoidea under the name subundulata, and his *P. conoidea* (Pl. xxii., f. 4) seems to be an unnamed species.

(484 A) RADIACMEA CALAMUS (Crosse and Fischer, 1864).

Patella calamus Crosse and Fischer, Journ. de Conch., xii., 1864, p. 348: St. Vincent's Gulf, S. Aust.

Dead shells were sorted out of shallow water dredgings from Twofold Bay, N.S.W., which were referable to this species, though varying a little from the type and may later show a recognisable variant.

(484 B) PATELLOIDA SUBMARMORATA (Pilsbry, 1891).

Acmaea marmorata var. submarmorata Pilsbry, Manual Coneh., Ser. ii., Vol. xiii., 1891, p. 52, Pl. 42, figs. 69-70: Port Jackson.

This species was accidentally omitted by Hedley from his N.S.W. List, as it is a common and well-known Sydney shell, living about high water mark just below *P. petterdi*. It is well differentiated from the southern forms and ranges into Vietoria at Mallacoota. Bell's series from Port Fairy were so instructive that I investigated the nomination of the species with his shells in hand. These showed two forms from the same locality, one living at medium tide, the other below low water, the former higher and more irregular, the latter flattened and regularly starlike. May states of *marmorata*, "common near highwater mark, much eroded," but does not show altitude, only internal view, in his Illustr. Index Tasm. Shells, Pl. xxii., f. 9. Pritchard and Gatliff used the specific name gealei Angas, citing latistrigata Angas and marmorata Ten.-Woods as synonyms. Vereo, from examination of the British Museum types, rejected gealei as referable to a distinct species, but admitted latistrigata Angas was apparently only a smoothish form of marmorata Ten.-Woods, but used the latter name. Pritchard

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and Gatliff accepted this correction, but pointed out that latistrigata had priority. I searched for the types in the British Museum, and found those of latistrigata and gealei. Of the latter, Verco had concluded "The two type shells are 24 mm. x 21. I think they are large albino variants of A. erucis Ten.-Woods." I had great difficulty in tracing these types in the British Museum, but at last found them among the Patellidae, as one was a *Patella*, the other specimen an *Acmaea* Though these were in the same box, they had been presented at different times, the larger one, the Patella being registered 70.10.26.155. This means the 155th set registered on the 26th of October, 1870, and the register showed that here was included all Angas's type shells presented by him, but none stated to be types. Reference to the original description of P. gealei (Proc. Zool. Soc. Lond., 1865, p. 57) gave details "sed pagina interna metallice splendente, aureo parum tincta, margine minimo; spathula lurida, plumbeo et fuseo nebulosa. Long .1 (error for 1): lat. .86: alt. .4 poll." The Patella agreed in these items, but not the Acmaea, which is smaller, narrower and taller. The latter was registered 77.5.12.63, when Angas presented another series, including new species described since the previous gift. The Acmaea was marked "type" some years later in error, and then placed in the box with the real type. It was intended by Angas as an additional specimen of the rare species previously described. The Patella is very much corroded externally, but the edges show the regular ribbing of the Patella rather well: the inside is "splendidly shining" as it is a diseased specimen, and the shining effect is due to the deposition of extra enamel internally to prevent the external corrosion eating through. The Acmaea was regarded as conspecific (probably from memory only) by Angas from a similar cause, a fracture causing the animal to enamel internally in the same manner. The Acmaea is undoubtedly a *crucis* shell, but the *Patella*, which is the *sole* type of *P. gealei*, is a small diseased specimen of the South Australian variegata or limbata, it is impossible to determine which, if there be two species, as Verco concludes. The New South Wales members of the Acmaeidae would now be Patelloida alticostata antelia Iredale 480

A Patelloida alticostata complanata Iredale

481 Notoacmea mixta mimula Iredale

. 482 Radiacmea mufria (Hedley)

A Radiacmea insignis cavilla Iredale

483 Notoacmea petterdi (Ten.-Woods)

A Notoacmea flammea diminuta Iredale

. 484 Patelloida subundulata (Angas)

A Radiacmea calamus (Crosse and Fischer)

B Patelloida submarmorata (Pilsbry)

Two corrections to be made in connection with Neozelanic species may be here added. Searching for these Australian types I came across (in the British Museum) a tablet bearing a small shell bearing the name "Patella inconspicua Gray. New Zealand, Dr. Stanger" in Dr. J. E. Gray's handwriting, and the register number 42.11.16.92; added by E. A. Smith was "Dieffenbach n. 123." Reference to Dieffenbach (p. 244) gave the description of n. 123. "Shell conical, oblong, with about 20 radiating ribs, the apex erect, disk white, rather greenish under the tip, length $1\frac{1}{2}$ inch." Such as it is, this description agreed with the shell on the tablet save in size, the length being $\frac{1}{2}$ inch, not $1\frac{1}{2}$, as written: such an error is common in connection with Gray's work. The species described is the one later called *Fissurella rubiginosa* by Hutton, and the type probably came from the Bay of Islands, a locality mentioned by Suter for this species. which must now be catalogued as *Radiacmea inconspicua* (Gray). The shell described by Suter (Manual New Zeal. Moll., 1913, p. 81) under the name *Helcioniscus ornatus* Dillwyn subsp. *inconspicuus* Gray searcely seems worth distinguishing, but this matter must be determined by Neozelanic conchologists on the spot.

The second item is the more pleasing reinstatement of the name *fragilis* for the peculiar little species so named by Chemnitz, whose name I was compelled to reject, since Chemnitz was not a binomial writer. At the time I wrote my Commentary on Suter's Manual, I could not trace, even with the help of Sherborn's MSS. for the second part of his Index Animalium, now happily in progress of publication, a use by a binomial worker of Chemnitz's name prior to the proposal by Lesson of his species *P. unguis-almae*. I now record that *Patella fragilis* was legitimately used by Sowerby in the Genera Recent and Fossil Shells, Part 21, Pl. 140, f. 6 and text in 1823, so that we can revert to the specific name so well known, the species being now referred to as *Atalacmea fragilis* (Sowerby).

(485-488) Family PATELLIDAE.

The most remarkable distinction between the Adelaidean and Peronian Regions is seen in the presence of the genus *Stenochiton*, of the Order Loricata, and of the genus *Nacella*, of the present family, in the former Region, in each case more than one species having evolved, while no trace of either has been found in the latter. In order to attract more attention to this item, I here introduce the new generic name *Naccula*, naming *Nacella parva* Angas = *Patelloida punctata* Quoy and Gaimard as type. This species has so little resemblance to *Nacella*, that, when it was first received in Britain some eighty years ago, it so puzzled the industrious shell-namers of that period that they did not name it at all, the specimens being still unnamed in the British Museum. The earliest name, as above given, was bestowed by Quoy and Gaimard (Voy. de l'Astrol., Zool. Vol. iii., 1835, p. 365, Pl. 71, f. 40-42) from King George Sound, W.A., a determination hitherto neglected.

(485) PATELLA PERPLEXA (Pilsbry, 1891).

Dealing with Neozelanic shells, I was able to reetify the specific designation of the shell previously known as Acmaea octoradiata Hutton, and from shell characters referred it to Patelloida. Hedley, in his N.S.W. List, differed, concluding it to belong to Patella, and, as the subdivisions of that family are imperfectly known, merely classed it under Patella. Roy Bell sent me a number of dead shells, but also a few live ones procured at a very low tide, and one of these showed the dried up animal, which proved to be of *Patelloid* facies. From this the radula was extracted for me by my friend Lt.-Col. Peile, and upon examination it was seen to be very near those of P. aculeata and P. ustulata, as figured by Claude Torr (Trans. Roy. Soc. S. Aust., xxxviii., 1914, p. 365, Pl. xx., figs. 3 and 2). C. Torr notes that the latter has only one marginal, and that P. vulgata L. has no central tooth, while P. cretacea, as figured by Cooke, has a central tooth but only two marginals. Upon this evidence I much doubt the occurrence of this species in New Zealand, and suggest reconsideration. I have since examined specimens from N.Z., which proved to be immature Patelloida stella Lesson. Some small dead shells from Mallaeoota, Vic., and some from shallow water dredgings in Twofold Bay, N.S.W., were attributed by me to Patella chapmani, but later I recognised that they were the young of the present species. The description of Patella chapmani Ten.-Woods (Papers Proc. Roy. Soc. Tasm., 1875 (1876), p. 157) applies very well to this species and suggests reconsideration of the specific name. Certainly my shells agree closely with the description of *P. chapmani*, as they are as certainly Pilsbry's *P. perplexa*, in which case Tenison-Woods's name claims usage.

The radular formula is 3.1.2.1.2.1.3: the central tooth is small while the huge lateral appears to have four cusps, the three marginals rather delicate. In examining these radulae, I was impressed by the futility of the radular formula in indicating relationship, as another radula giving exactly the same formula was absolutely different owing to the different setting of the teeth: in some cases, almost a straight line was seen, in others almost a semicircle, and consequently the number of rows in the same length was very different, though the total number of rows might be the same (since figured by Peile, Proc. Malac. Soc. Lond., xv., 1922, p. 17, Pl., fig. 4). The preceding was written in England, and I have since carefully studied the species with interesting results. Dead shells, mainly very regular octoradiata, abound on the Sydney beaches, so that they must be very plentiful below low water mark; consequently I made special search and collected alive a fair number with the result that those on the surfbeaten rocks were very flat, eight-ridged octoradiata, while those at all sheltered by an intervening boulder were taller, still eight-ribbed, but ribs not so prominent. This at once confirmed the suggestion that chapmani was the same shell, with the additional information received from Mr. W. L. May that chapmani was the common form in southern and eastern Tasmania and octoradiata was very rare, even if typically found there. He pointed out that Acmaea alba Tenison-Woods was also a synonym. This was described (Proc. Roy. Soc. Tasm., 1876 (1877), p. 155) from northern Tasmania, and I found in the Australian Museum a specimen marked "Author's type." At first sight, this seemed very different, being a high rounded, regularly ribbed shell with about fourteen sharp ribs intercalated with smaller ribs and riblets; it has been cleaned up so that the juvenile shell appears to show nine or ten primary ribs or bunches. The locality is confirmed by a set of three with data in Miss Lodder's handwriting "Acmaea saccharina L. (Plentiful on) N. Coast Tas." One shell agrees very closely with type, the second is a little less circular and a little taller but otherwise similar, while the third is a small shell of the chapmani style, showing eight primary ribs with four a little weaker.

My conclusions are that the specific name must be *chapmani*, but that the Adelaidean form may bear the varietal (subspecific) name of *alba*, and the Peronian form may be called *P. chapmani perplexa*.

Pilsbry (Man. Conch., Vol. xi., 1889, p. 54, Pl. 42, figs. 76, 77, 78) has given excellent figures of a specimen of *Acmaea alba* Ten.-Woods, noting that the description given by Tenison-Woods did not seem applicable to the shell figured. Chapman and Gabriel (Proc. Roy. Soc. Viet., xxxvi. (n.s.), Dec., 1923, p. 24) have described *Patelloida hamiltonensis*, while recording *P. perplexa* in a fossil state: these should be compared with a series.

(486) PATELLA SQUAMIFERA Reeve, 1855.

The type of *Patella* is undoubtedly *vulgata* L., and, when the common *Helcioniscus* of New South Wales was first described, it was independently compared by two workers with the common European species, as already recorded by Hedley. Consequently the reference of a very different shell to *Patella* does not seem a logical conclusion. In view of this, it will be useful to have a name for these aberrant forms, so I propose the new generic name *Patellanax*, with

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P. squamifera Reeve as type. Some years ago Mr. Hedley, in correspondence, suggested a relationship with the large Patella, i.e., "Ancistromesus" kermadecensis, from the Kermadec Group. Previous to that communication, I had attempted to account for the presence of that large species on that isolated group, and concluded that it was an outlier of the cretacea group. The series in the British Museum shows Patella cretacea Reeve (Conch. Icon., Dec., 1854, Pl. xxi., f. 53: Tahiti) which seems to be equivalent to P. gigantea Lesson (Voy, Coquille, Vol. ii., 1830, p. 423) from Borabora, Society Group; Patella pentagona (Born?) Reeve (Conch. Icon., Dec., 1854, Pl. xx., sp. 48): Elizabeth I., South Seas; Palmerston I.: Patella stellaeformis (ibid.) which was described first in the Conch. Syst., Vol. ii., 1842, p. 15, Pl. exxxvi., f. 3, from unknown locality: P. pica Reeve (Conch. Icon., Dec., 1854, Pl. 19, sp. 45): South Seas. All these are closely related to the Kermadec shell, and small specimens of the latter collected by J. Macgillivray were labelled *pica* fifty years ago. The series of *pentagona* from Palmerston Island shows the growth from a small regular eight-pointed shell like *Patella perplexa* into a semi-oval comparatively smooth-edged adult. 1 secured similar shells showing growth stages of the Kermadec species, and it is peculiarly interesting to find *Patella perplexa* (see preceding note) showing this evolution in the shell in an arrested stage, yet with a similar radula, while, if Claude Torr's observations on the radula of ustulata be confirmed, we have also a very peculiar modification in this feature with the shell characters little altered. In Proc. Roy. Soc. Vict., xv., n.s., pt. ii., Feb., 1903, Pritchard and Gatliff allowed Patella ustulata (p. 193), Patella aculeata (p. 193), P. chapmani (p. 193), and then proposed (p. 194) Patella hepatica P. and G. nom. mut. for Acmaea striata Pilsbry (non Quoy and Gaimard) Man. Conch., Vol. xiii., 1891, p. 47, Pl. 35, f. 27, 28, 29." As no description was given, Pritehard and Gatliff's name can only be construed as alternative for Pilsbry's identification, which is of aCelebes shell, and, consequently, has no place in South Australian literature. Verco recorded hepatica from South Australia, but surmised that it might only be a variant of ustulata, which he was also inclined to associate as conspecific with aculeata. Claude Torr has published accounts of the radulae of ustulata and aculeata, which proclaim these as very distinct species. My series, sent from Port Fairy, Vic., showed them as quite distinct forms, the aculeata living higher up, and the ustuluta practically below low tide. I did not receive any shells which I could refer to hepatica and from Lakes Entrance and Mallacoota all the shells sent were aculeata, as were all the Twofold Bay specimens. From Tellaburga Island, live aculeata of large size, quite abnormal, were also sent, but dead shells were either ustulata or hepatica, and the latter looked very distinct. Since the preceding was written, Gatliff and Gabriel have renamed (Proc. Roy, Soc. Vict., xxxiv., n.s., May, 1922, p. 152) hepatica, which they have called victoriae, as they noted the name was preoceupied by Gmelin, but still their name has no standing. Verco has suggested that this un-named, yet multi-named, form may be an extreme variant, but in view of Claude Torr's differentiation of the radulae of ustulata and aculeata, no certainty can be considered until the radula of *hepatica* is determined.

Again, local collecting has furnished interesting results, as at Port Fairy I found a couple of worn dead shells of the *hepatica* form, while continued search on the Sydney beaches has failed to reveal anything save *aculeata*. In southern Tasmania the predominant species appears to be *ustulata*, though *aculeata* also occurs. This form was named *P. tasmanica* by Tenison-Woods (Proc. Roy. Soc. Tasm., 1875 (1876), p. 157) who, the succeeding year, withdrew his name in

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favour of Reeve's ustulata (id., 1876 (1877), p. 49), giving an excellent account of shell, animal, habits and radular characters, eiting two laterals. Philippi's Patella diemensis (Zeitschr. für Malak. (Menke), 1848 (Mar., 1849), p. 162) from Hobart, Tas., which Pritchard and Gatliff once proposed to use instead of the incorrect name tramoserica, appears to be referable here, as the words, "albida, sulcis frequentibus circa 54, fuscis exarata, intus alba; margine crenulato, intus ad erenas puncto fusco notato," apply to some variations of the present species, but are never applicable to tramoserica. An earlier name given to the Western Australian shell appears to be Patella peronii Blainville (Diet. Sci. Nat. (Levrault), Vol. xxxviii., 1825, p. 111) from King George Sound, but which may be the southern Tasmanian shell. At this place Blainville definitely described six species from Australia, one of which, Patella variegata (p. 101, from Botany Bay), has been accepted for the Sydney Helcioniscus. The other names are P. conica (p. 107) from Maria I., Tas., P. solida (p. 110), P. rubraurantiaca (p. 110), and P. laticostata (p. 111) from New Holland without definite locality. The description of P. conica does not agree well with any shell from Maria Island, and it is here suggested that it may be the Patella gigantea named, but not described, by Peron (Voy. decouv. Terres Australes, Vol. i., 1807, p. 120) from Bernier's Island, but no specimens are available from that locality for comparison. Patella solida appears to have been collected in southern Tasmania, as the description agrees with the species commonly called *limbata*. Mr. Hedley had independently arrived at this conclusion, and there are specimens in the Australian Museum agreeing exactly with Blainville's account. Patella rubraurantiaca was given to the South Australian shell known as P. limbata, the description applying accurately to specimens in the Australian Museum collected at St. Francis Island, Nuyts' Archipelago, by Sir J. Verco, an island on which Peron himself collected. Patella laticostata was given to shells, collected by Peron and Lesueur at King George Sound, and these would undoubtedly belong to the species, later named *Patella neglecta* by Gray, which name should be superseded. This accounts for the species localised by Blainville from New Holland, and also covers all the larger limpet-like shells, save P. alticostata, which may be among the large number described from unknown locality. Another curious factor is then explained as, when Quoy and Gaimard named all their new species of limpetlike shells, they confined themselves to the smaller species, the reason being that all the large ones already bore Blainville's names in the Paris Museum where they also worked.

To summarise:

- Patella peronii Blainville, 1825 =: Patella diemensis Philippi, 1849 =: Patella ustulata Reeve, 1855 =: P. tasmanica Ten.-Woods, 1875.
- Patella variegata Blainville, 1825 = P. tramosericus auct.
- Patella conica Blainville, 1825 may equal P. gigantea Peron, n.n., Bernier I., W.A.
- Patella solida Blainville, 1825 = P. limbuta, Philippi, 1849: East Tasmania.
- Patella rubraurantiaca Blainville, 1825 = P. limbata so-called from South Australia.
- Patella laticostata Blainville, 1825 = P. neglecta Grav. 1826.

(487) CELLANA ILLIBRATA (Verco, 1906).

I have been quite unable to understand why Verco described this species as a *Helcioniscus*, as both the shell and radular characters differ appreciably. From the shallow water dredgings from Twofold Bay, I sorted out dead shells which I

regard as similar to those accepted by Hedley as Verco's species, but they do not exactly agree in being of less altitude and the apex less directly central. I have not been able to see the muscle scars in my specimens yet, so my identification may even be wrong.

I have sorted many specimens out of shell-sand from the Sydney beaches, and find that the muscle sears are Patelloid, and consequently the species might be better placed in *Parvacmea*, while the series is separable from Verco's species by their shape. Many are rose-rayed and recall May's figure of *N. suteri* (Illustr. Index Tasm. Shells, 1923, Pl. xxii., f. 12). May's shells may be the southern variant of the species here discussed, and for which I propose the name *Par*vacmea illibrata mellila, n. subsp.

(488) CELLANA VARIEGATA (Blainville, 1825).

This species has long interested me and I desired good series to study the variation. I collected a few in Sydney Harbour and a fine lot at Caloundra, Q'land, and these showed little variability under normal conditions. Roy Bell sent me a magnificent lot of limpets from Lord Howe Island, as these had been regarded as the same as the Sydney species. They were obviously distinct and, moreover, two separable forms were received, living in different localities. From the British Museum Collection the form *limbata* seemed easily separable from my normal variegatus, so I wanted to study series, as there had been more than one view upon the subject. Tate and May called the Tasmanian shells tramosericus, citing *limbata* Phil. as an absolute synonym without any remarks, while in Pritchard and Gatliff's List, Patella limbata is also included as a distinct species from Cape Otway (G.B.P.) alone. Verco at first only included one form, but afterward added P. limbata stating "It has been taken at the Neptune's and Thistle Island, and in Spencer Gulf by Dr. Torr: on Yorke Peninsula by Matthews; at Encounter Bay by myself. I did not find it at Kingston, Robe, Beachport, or MacDonnell Bay," and later "It is very common, large and beautiful in St. Francis Island. I did not take it anywhere in Western Australia." Geographically, limpets from Port Fairy, Vic., might be limbata. A series sent by Roy Bell are very instructive; all are tall and at first sight two distinct sets can be separated, which are demonstrably conspecific. The first set are normal, of yellowish ground with black stripes, regular flattened ribs and the apex eroded; inside yellowish, the spatula varying from brown to pale cream, the edges marked with black: these came from sandstone rocks and some specimens approximated in their uniform orange colour inside and out to the *flava* variety of the Neozelanic C. radians, about which I have commented (Trans. N.Z. Inst., xlvii., 1914 (1915), p. 432-3). The second set are also tall, bluish-black above, with few or no lighter stripes, ribs pronounced and somewhat sharply cut, and very little erosion present: inside bluish, the spatula milky white from pale brown, edges scarcely marked with black: these came from black basalt rocks and correspond to the perana variety of the Neozelanic C. radians. I have compared these with the Peronian representative and conclude they are specifically identical, but, after allowing for individual variation, I find they are constant in their fewer ribs, comparatively taller and narrower, and the beaded ribs so noticeable in the typical juvenile are almost entirely missing. I propose to name the Port Fairy series Cellana variegata ariel, n. subsp., as I find Patella limbata was proposed by Bolten (Mus. Bolten, 1798, p. 1) years before Philippi used it. There are probably many synonyms of the typical variegatus, but, as far as I can trace, none from an Adelaidean locality.

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A series of shells was sent from Mallacoota, which were all small and of the yellowish type, and from Tellaburga Island, a fine lot of very large shells, also of this type, much eroded; a few small shells from Melbourne Heads were similar. Very many smallish shells were received from Twofold Bay, which generally agreed in coloration. The Mallacoota, Tellaburga Island, Melbourne Heads and Twofold Bay shells, though varying slightly in each case, showed the features ascribed to the Peronian form as already given from Sydney and Caloundra specimens. Eastern Tasmanian shells all appear to differ, even reaching the Furneaux Group, whence May recorded (Vict. Nat., xxx., 10 July, 1913, p. 57) Patella limbata of huge size. The investigation of that Group has proved of great interest to the student of geographic zoology, as the Adelaidean forms commonly met there by May are generally missing from the Mallacoota collection, and, moreover, the Peronian species now traced down to Mallacoota do not appear to have yet reached the Furneaux Group. May, however, records C. variegata Bl. as "rare and small in Tasmania, East Coast," so that reconsideration is necessary, while I do not know what species occurs on the North Coast. Cellana variegata does not occur in Neozelanic waters, some form of radians having been mistaken for it, as I have previously suggested.

The subject requires study from the following viewpoints: Cellana variegata Bl. lives on the Peronian coast from Point Arkwright, a little north of Caloundra, Q'land down the east coast and round the corner to Melbourne Heads. According to locality and station, it shows a little variation in size, shape, form and colouring. Does it occur normally on the eastern Tasmanian Coast? What species occurs on the northern coast of Tasmania? The western Victorian shells are notably different in shape and a little in sculpture, and appear to constitute a recognisable race, which I have named Cellana variegata ariel. Does a form of this race occur in South Australian waters?

Cellana solida Blainville is the name for the eastern Tasmanian shell known as *limbata*, which appears to be a distinct species. Cellana rubraurantiaca Blainville is the name of the South Australian shell, known as *limbata*, and this may be a different species from the eastern Tasmanian solida. What species occurs in Victoria, that has been recorded as *limbata*, and what relation (if any) of this species lives in Western Australia?

(494) TECTARIUS PYRAMIDALIS (Quoy and Gaimard, 1833).

The figure given by Quoy and Gaimard is very poor, but the locality Jervis Bay, N.S.W., has allowed acceptance without argument.

Fifty years previously Chemnitz (Conch. Cab., Vol. v., 1781, p. 42, tab. 162, fig. 1545-46) had described "Der Kleinknotige Krausel," "ex Museo Spengleriano et nostro," received from Cook's trip to the South Seas which he figured, and mentioned a smaller form from the West Indies. For this species (a compound, but mainly Australian) Gmelin proposed the name *Trochus nodulosus* (Syst. Nat., Vol. i., 1791, pt. vi., p. 3582), giving as habitat "In Oceano australi et (*minor*) mari Americano meridionalem alluente," thus absolutely fixing his name to the Australian shell. Unfortunately, the name he selected had been previously used by Solander (Fossil Hanton, 1760, p. 10), and the same result befell Dillwyn's name *Turbo trochiformis* (Deser. Catal., pt. ii., 1817, p. 826), given to Chemnitz's figure with the locality restricted to South Seas, as Born (Index Mus. Caes. Vindob., 1778, p. 355) had anticipated the name selection. This would leave Quoy and Gaimard's name, but there is another complication. Menke (Verz. Conch. Samml. Malsburg (pref. Mai 18) 1829, p. 10), introduced *Litorina tuber*culata for *Trochus nodulosus* Gmelin, and Menke's name seems acceptable. In his Synopsis, 2nd ed., published the succeeding year. Menke gave (p. 44) the same name to Gmelin's *Trochus nodulosus minor*, and the latter usage has been accepted, but is not correct.

Chemnitz's figures are excellent, and are probably painted from specimens collected by Captain Cook's companions at Botany Bay, N.S.W., where the species is easily procured at Cook's landing place even at the present time. In volume ix. of the Manual of Conchology, published in 1887, Tryon used (p. 258) *Tectarius nodulosus* ex Gmelin, to include the West Indian, Ceylon, Australian and New Zealand (where the genus does not occur) forms.

The name would then appear to be *Tectarius tuberculatus* (Menke, 1829) and the species ranges down to Mallacoota, Vic., and appears to be an addition to the Victorian List.

(508 A) LIRONOBA AUSTRALIS (Ten.-Woods, 1875).

The common Tasmanian shell known as *Rissoa tenisoni* Tate is here added to the New South Wales fauna. It was described as *Cingulina australis* by Tenison-Woods (Papers Proc. Roy. Soc. Tasm., 1875 (1876), p. 146) and the specific name was altered on account of its transference to *Rissoa*, in this case practically an unwarranted change, as it is less like the type of *Rissoa*, than it is like *Cingulina*. Upon its distinction as *Lironoba*, the original specific name must be reverted to.

(508 B) BOTELLUS BASSIANUS (Hedley, 1911).

Onoba bassiana Hedley, Zool. Results Endeavour, 1909-10, Part i., 22 Dec., 1911, p. 108, Pl. xix., fig. 25: Off Devonport, N. Tasmania.

When I introduced Subonoba (Trans. N.Z. Inst., xlvii., 1914 (12 July, 1915), p. 450), I wrote "Probably the shells classed by Hedley in Onoba viz. Onoba bassiana . . . could be here placed, as, though it does not fairly agree in general shape and mouth characters, disagrees much more with typical Onoba."

A few specimens were received from the 50-70 fathoms off Green Cape, and from 25 fathoms in Twofold Bay, and I have no hesitation in introducing the new generic name *Botellus*, citing *O. bassiana* Hedley as type. The circular mouth separates this group widely from any other of the Austral Rissoid series. *Onoba glomerosa* Hedley from Queensland belongs here, but Watson's mercurialis, also from Queensland, appears to be a *Subonoba*.

(510) ATTENUATA MINUTULA (Tate and May, 1900).

This species is certainly not referable to this family. It is a very peculiar little form without any known close relations, and I do not consider Hedley's *Rissoa integella* congeneric. I first found it as dead shells in shell-sand from northern Tasmania, but I have found it alive in some dead-coral washings from 20-25 fathoms in Twofold Bay, and I now propose for it alone the new generic name *Coenaculum*. It is not rare in shell-sand on the Sydney beaches.

(521) ANABATHRON EMBLEMATICUM (Hedley, 1906).

This species, easily recognisable, was not uncommon, but was always small, so that I concluded the measurements given by Hedley might be incorrect, and this I find to be so, a mistransliteration having taken place. The correct size of the species is 2 mm. x 1 mm., not 4 x 2 mm. as given.

(536 A) RISSOINA LINTEA Hedley and May. 1908.

Rissoina lintea Hedley and May, Rec. Austr. Mus., vii., 11 Sep., 1908, p. 117, Pl. xxiii., fig. 11: 100 F., off Cape Pillar, Tasmania.

Specimens were sorted out of the 50-70 fathom dredgings off Green Cape, another addition to the N.S.W. List.

(539 A) HETERORISSOA WILFRIDI (Gatliff and Gabriel, 1911).

Jeffreysia wilfridi Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxiv. (n.s.), 1911, p. 188, Pl. xlvi., fig. 3.

This adds a species and genus and probably a family to the N.S.W. List. The genus *Heterorissoa* was proposed by me (Proc. Malae. Soc. Lond., x., Oct., 1912, p. 221), with a Kermadee species, *H. secunda* (op. cit., fig. in text) as type, to include the (apparent) southern representatives conchologically of the northern *Jeffreysia*, which show a distinct difference in the opercular characters. Found in shallow water dredgings sent by Roy Bell from Twofold Bay. I find shells not uncommon in the shell-sand of the Sydney beaches.

(540 A) STIVA ROYANA, n.sp. (Plate xxxiv., f. 11.)

A second member of the genus *Stiva*, of smaller size and more delicate sculpture, and with a typical operculum.

Shell awl-shaped, apex blunt, mouth ovate, slightly channelled anteriorly. Colour white marbled with-orange, forming a subsutural band in many cases, the apical whorls uniform orange. The first two whorls are smooth, the succeeding one faintly longitudinally ribbed, the ribs growing stronger, the adult whorls numbering ten. The ribs number about thirty-two on the penultimate whorl, flexuous and narrow, the interstices being wider and latticed with very fine scratched lines: on the last whorl the ribs cease at the periphery and the basal sculpture consists of transverse scratches and obsolescent growth lines. The outer lip sharp but not thin, the inner lip continuous and appressed to the basal whorl, a minute umbilical chink sometimes appearing. Length 15.5 mm., breadth 6 mm.

Dredged in 10-25 fathoms, Twofold Bay; also in 10-15 fathoms, Disaster Bay; and also in 10-15 fathoms off Gabo Island, Victoria.

(561 A) CAPULUS AUSTRALIS (Lamarck, 1819).

Hedley has recently accepted *Capulus calyptra* Martyn for the Bass Straits *Capulus*, but this I think is erroneous, and I would recommend the name he previously determined for use, and add the species to the N.S.W. Fauna, as it has pushed round the corner and lives in Twofold Bay. Numerous specimens were sent from Port Fairy, where it is abundant on *Haliotis*, and then quite a few were received from Mallacoota and Tellaburga Island, and among these very many showed the apical whorls which were, as expected, always dextral. Some time ago, I examined all the *Capulus and Hipponyx* in the British Museum Collection and in my notes I find "*Capulus danieli* Crosse. Type from New Caledonia is not South Australian shell, but is *calyptra* Martyn." Specimens from Lord Howe Island are quite unlike southern Australian shells. As I have now plenty of good material I will reinvestigate the matter, and note the radular characters of these animals. Maplestone (Monthly Micros. Journal, 1 Aug., 1872, Pl. xxvi.) has figured the radula of a Victorian specimen.

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(563 A) PLESIOTROCHUS MONACHUS (Crosse & Fisher, 1864).

It seems very doubtful that this is the correct generic location for this shell, which was described (Journ. de Conch., xii., 1864, p. 347) from Port Adelaide, S. Aust., and which I recovered from a dredging made in 10-20 fathoms off Merimbula, N.S.W., and odd broken dead shells from Twofold Bay. It appears to be an addition to the recorded N.S.W. fauna. While the radula and operculum of this species are known, those of the type of *Plesiotrochus*, a rather differentlooking shell, are not, and as the latter is a tropical genus, whereas the present shell appears to be confined to the Adelaidean Region. outside the tropics, its transference is soon anticipated.

(566) BITTIUM GRANARIUM (Kiener, 1842).

Bittium has maintained its generic position because the animal showed a multispiral operculum with a central nucleus, in place of the normal Cerithioid paucispiral operculum. The Australian shells appeared exactly comparable with the European forms, but the operculum is paucispiral, and, consequently, once again an alien name must be dismissed, and the Australian shells that agree most closely with European ones prove to cover different animals.

More than one generic form has been lumped in the Austral Bittium, but I here propose only the new generic name Cacozelia, with the species Cerithium lacertinum Gould as type.

Hedley has, since this note was written, published the differential features that separate the Western Australian granarium from the eastern Australian *lacertinum* Gould.

(577) Seila TURRITELLIFORMIS (Angas, 1877).

Though Hedley synonymised with Angas's species, his own Seila attenuata, I have never been sure of this identity. Hedley's species was well known and represented a generic type for which I propose the new generic name Seilarex. Species closely agreeing in generic characters from South Africa, differ at sight from the Seila in shape, sculpture, form of mouth and texture of shell. Angas's picture did not show these particulars, and I have found, among some shells belonging to Mr. Hedley, specimens collected years ago by Brazier which are near Angas's figure, and seem to represent the latter's species. Therefore, I would add No. 577a Seilarex attenuatus Hedley 1900 (Seila).

Live shells have not yet been found, but their study will be interesting, as, in the Check List. *Seila* and *Cerithiopsis* are placed in Cerithiidae, and followed by the Triphoridae, whereas in connection with Palaearctic species these genera, from study of the animals, are widely separated, and it is possible that the Austral species entirely differ.

(591-600) Family TURRITELLIDAE.

Ten species are recorded, all under the genus name *Turritella*, though when Miss Donald wrote her essay she had provided two special names for some Austral forms, thus: *Colpospira* Donald (Proc. Malac. Soc. Lond., iv., pt. 2, Aug. 1900, p. 51: Type, by original designation, *Turritella runcinata* Watson, and (p. 53) *Platycolpus*, type, by original designation, *Turritella (Colpospira ?) quadrata*, n.sp. (Pl. v., fig. 8-8b), from Bass Straits, 45 F. In that essay only a few specimens were studied, but the results were good. I have received

thousands of specimens of many species from various depths. From these I would urge the recognition of the above names, as Turritella is widespread and of great antiquity, and none of the Australian species is closely related to the typical species. Moreover, I find that the Austral forms can be separated into distinct series so that more than one generic name is necessary.

Probably these things are rare, but otherwise they have been badly treated. Watson's determinations are particularly wretched, as he was really not a good conchologist, and his painstaking results are peculiarly unreliable. Hedley has pointed out that he named wretched fragments of juvenile specimens as novelties, and in the present group his results are amazing. I have just examined the whole of the Challenger material named by him, and find a dead shapeless item soberly named and allotted a number and registered as a molluscan specimen in the British Museum. This has often occurred, and little reliance can be placed upon any of his records, and many of his "new species" are scarcely recognisable. It would serve little good purpose to controvert all his identifications, one will suffice. Hedley noted two species were on the tablet named Turritella carlottae, and concluded they represented the two localities cited by Watson for this species, Bass Straits and New Zealand. Smith (Brit. Mus. (Terra Nova) Exped., 1910, Zool. Vol. ii., No. 4, 27 Mar., 1915, p. 80) pointed out that Hedley was mistaken, though two distinct species were on the tablet, and wrote: "The shell from East Moncoeur Island, Bass Strait, quoted by Watson, is preserved in a box by itself, and is distinct. It evidently was not seen by Mr. Hedley." However, Smith did not determine it: the "shell" is a broken tip of tasmanica Ten.-Woods, a species quite unlike Hutton's vittata, so that in this case alone Watson confused three species. More interesting to the student is the extreme localisation of the species and the geographical variation. After collecting many species in Twofold Bay and Disaster Bay, in depths from 5-25 fathoms, a single dredging in 12 fathoms off Gabo Island, only a few miles further south, showed a very distinct species.

When Miss Donald wrote, twenty years ago, she noted the difficulty of identifying two Australian species $Turritella \ sophiae$ Brazier and $Turritella \ higginsi$ Petterd, neither of which had been figured. I have not found figures of these yet, and Tate and May cite the latter as a synonym of T. accisa Watson, and the former as not known to them.

(593) TURRITELLA GUNNII Reeve, 1849. (Plate xxxvi., figs. 3, 12, 13.)

Hundreds of specimens were dredged by Roy Bell in Twofold Bay in from 15-25 fathoms. Variation in sculpture and form could be well studied and radular characters easily investigated. The opercular features showed this to be quite distinct from that of *Colpospira*, while, similarly, the *quadrata* series were proved to belong to that genus, only subgeneric status being permissible for *Platycolpus*. The recognition of the *gunnii* group as a distinct genus is thus necessary, as in the characters of the protoconch, due to their viviparous habit, it also differs.

1 propose for the species T. gunnii Reeve the new generic name Gazameda, and conclude this name should be used for the Australian Turritellids with long spires, sinuate mouth, peculiar protoconch, viviparous habits, simple operculum, as distinct from *Colpospira*, of shorter growth, more sinuate mouth, different protoconch, non-viviparous habits and complex operculum.

Watson's T. philippensis, described from one young dead shell from 33

fathoms in Bass Straits, has been rightly regarded as synonymous with the present species. It may be, however, that it represents a geographic or bathymetric form. The specimens from 50-70 fathoms off Green Cape all tend to emphasize the ante-sutural roll (Plate xxxvi., f. 13) seen in the picture of *philippensis*, and generally absent or obsolete in the shallow water shells (Plate xxxvi., f. 12). Again, the shells dredged in 18-25 fathoms in Disaster Bay appear a little broader on the average and more strongly sculptured (Plate xxxvi., f. 3), though I have thousands from Twofold Bay shallow water for comparison, and, further, the deepwater shells above noted are narrower. Moreover, I observe that the females containing young are broader shells than others which have no young, and which I take to be males. It may be, however, that the ones without young are simply immature and that they do not produce young until a certain age. Against this may be noted the fact that very large shells were found to possess no young, but such cases should be dissected on the spot and sex noted.

(594) TURRITELLA OPULENTA Hedley, 1907.

It was obvious from the figure and description that this was not referable to *Turritella*, as commonly understood, and study of these had suggested the genus *Argyropeza* Melvill, which I had recognised from dredgings elsewhere.

Specimens turned up in the 50-70 fathom dredging off Green Cape, N.S.W., and these were seen to differ in features of the shell not easily determined from a description. I propose the new generic name *Glyptozaria* for this species alone, and this will distinguish it and draw attention to it. All the Australian members of the family Turritellidae have a sinus in the outer lip, more or less deeply marked, and in this species there is no sign of such a sinus.

I note that a fossil relative of this form exists among the Muddy Creek fossils in the British Museum, confused with Tate's *gemmulata*, and this adds to the very close alliance of the recent deepwater shells of southern New South Wales and the Muddy Creek series.

(595) TURRITELLA PARVA (Angas, 1877).

This species, described as a *Torcula*, has been recognised by Hedley, and, as in other cases, a reconsideration seems necessary, as the type in the British Museum does not seem to belong to the family Turritellidae at all. The mouth is broken, but the columella shows a basal point which suggests a canal, and thus *Seila*, but the whorls are a little pagodoid, and definite identity with any species known to me could not be established.

I have again re-examined this shell, and note that, as well as the outer lip being broken, the apical whorls are missing and the columella is slightly twisted, but the presence of a canal seems definite, and certainly the shell is not a Turritellid.

(596 A) COLPOSPIRA GUILLAUMEI, n.sp. (Plate xxxvi., figs. 4, 15).

Small for the genus, attenuately subulate, periphery keeled on later whorls, mouth nearly circular, outer lip deeply broadly sinuate (fig. 15). Colour pinkish-white suffused with fulvous and irregularly blotched with darker patches of the same colour. Apical whorls smooth and whitish, sutures deeply impressed, whorls flattened, periphery keeled, base rounded. The adult sculpture consists of a few transverse ridges, but mainly of growth lines, sinuate longitudinals following the mouth, more marked anteriorly. Columella nearly straight, faintly twisted anteriorly. Operculum typical. Length of type 15 mm.; breadth 5 mm.

Abundant in 5-15 fathoms in Twofold Bay, N.S.W.

This well-marked little species differs from C. quadrata (Donald), its apparent nearest relative, in its lack of transverse sculpture, and the quadrate whorling, as well as size.

(596 B) COLPOSPIRA QUADRATA (Donald, 1900). (Plate xxxvi., f. 5.)

Turritella (Colpospira ?) quadrata Donald, Proc. Malac. Soc. Lond., iv., Aug. 1900, p. 53, Pl. v., figs. 8-8b: Bass Strait.

This occurs in most of the deeper water dredgings from 25-70 fathoms, and, upon reference to the Muddy Creek fossils, I was surprised to find so much distinction, that, with the few specimens here, little could be definitely ascertained as to the ancestry of the recent species. A large species, *Turritella conspicabilis* Tate, was seen to have "quadrate" whorls when juvenile, but with different sculpture from the present species, and to grow to a much larger size than any recent shells I have seen. It might, however, bear the same kind of relationship to the recent shell as the huge *C. runcinata* recorded by Verco from South Australian seas does to the small *C. sinuata* from the Port Jackson area.

(597 A) COLPOSPIRA RUNCINATA (Watson, 1881).

When Watson wrote his preliminary descriptions (Journ. Linn. Soc., Zool. xv., 1881, p. 218) he described *Turritella runcinata* from the 38/40 fathom dredging off East Moncoeur Island, Bass Straits. Two pages later (p. 220), from the same locality, he added *Turritella accisa*, and on p. 224 he introduced *Turritella cordismei*, also from the same dredging. The series in the first two cases consists of three shells each, while in the last, four specimens were included. Miss Donald drew attention to the great similarity between the first two, and noted that the last named were juvenile. The three *runcinata* are larger and broader than the three *accisa*, but I conclude they are absolutely identical. The sculpture varies, and each set contains finer and coarsely sculptured shells. The four *cordismei* are really only two, as two unrecognisable dead tips are included: the other two are young, rather narrower shells, but almost certainly the same species: the larger is more smoothly, but the smaller is more coarsely, sculptured.

Then what is the shell recorded by Verco from South Australia under the name *T. accisa*?

A few specimens of C. sinuata (Reeve) were picked out of the shallow water dredgings, but mostly in the deeper series, about 20 fathoms, in Twofold Bay, and sometimes were accompanied by C. runcinata (Watson), and the variation in each makes it difficult to determine their validity without long series. My first conclusion was that runcinata was the southern form of sinuata, and this may be the correct one, but their occurrence together suggests their specific distinction, in which case Watson's T. cordismei might be referred to sinuata, and would represent the southern stage of the species.

Examination of the few Muddy Creek fossils available here, suggested that *platyspira* Ten.-Woods was the fossil relative of *sinuata*, and that the latter may be preserved as a distinct species, but I hope that this species or group of species will be studied with a view to the variation existent, as Verco has proclaimed himself puzzled with his large series from deepwater, and I think they are very variable.

Miss Donald noted (p. 50) "Murchisonia sutoris as a manuscript name given by Dunker to specimens in the Godeffroy Museum, collected by Captains Schultze, Pohl and Witt in Bass Strait, the best being probably obtained by the last named." As this indicates uncertainty and error, some facts may be here recorded. In the Museum Godeffroy Catalogue (iv., May, 1869), a preface dated 18 May, 1869, by J. Schmeltz, Jr., states that the shells have been determined by Dunker. A "Topographische und Zoologische Notizen" gives excellent details of the collectors for that once famous Museum with an account of their collecting grounds. On p. xix, it is noted that Captain Wendt (not Witt as Miss Donald quoted from Pfeffer's letter), in the Gulf of St. Vincent near Adelaide and on the south coast of Australia, dredged new species of shells, as well as known but rare species as Myadora pandoriformis Stutchb. Captain Wendt also dredged in Bass Strait, but later Captain Schultze dredged also in Bass Strait and in his collection there were specimens of the genus Murchisonia, hitherto only known in the fossil state, but the specimens were poor. Captain Schultze also collected, at the same time, Crassatella castanea Reeve, Myochama keppelliana Reeve and Pectunculus laticostatus Quoy and Gaimard. Digressing, it may be noted that the Crassatella were typical kingicola Lamarck, and that the Pectunculus referred to the New Zealand laticostatus Q. and G. was the one I have written about under the name *Glycymeris* flabellatus Ten.-Woods, and is the earliest record of this species. In the Catalogue iv., no Murchisonia is included, but on p. 77 "No. 3433 Torcula tenuilirata Dkr., n.sp. B(ass) S(tr.)" appears without any description. In Catalogue v., published Feb. 1874, there is "p. 148, No. 3433 Murchisonia sutoris Dkr. = Torcula tenuilirata Dkr. i. l. Mus. Godeffroy Cat. iv. Bassstrasse," and in the Corrigenda, p. 212, a note "ist eine Turritellide zum Genus Zaria gehörend (O. Semper)."

(600) TURRITELLA SUBSQUAMOSA Dunker, 1871. (Plate xxxvi., figs. 11, 14.)

A remarkable shell was found in the 15-25 fathom dredgings, in that it was only about halfgrown, with the mouth always broken; in no specimen did I find a perfect mouth, the outer edge being extraordinarily thin, and fractures could be traced along the shell. Three magnificent shells were dredged in a single haul at 25 fathoms, and upon comparison these proved to be the long-lost Turritella tasmanica Reeve (Conch. Icon., Vol. V., June, 1849, Pl. ix., sp. 42), described from Van Diemen's Land, from Dr. Sinclair's collecting, the type in the British Museum. Tate and May recorded the name and wrote "= T. lamellosa (?)." Hedley regarded the latter as a synonym of Dunker's species and the description given by Dunker agrees very well with that of Reeve. Specimens from Bass Strait, the types of Watson's lamellosa, differed from Reeve's type only in the suppression of the spirals and the greater prominence of the longitudinal threads. South Australian shells, labelled oxyacris Tate, a name also regarded as synonymous, showed a still further advance, the longitudinals overriding the almost obsolete spirals. In the most northern shells the latticing between the spirals is scarcely noticeable, and the form then looks quite distinct, and, moreover, looks like a form of *gunnii* with coarse spirals, but it is always a narrower shell.

Contrariwise, a fossil from the Muddy Creek beds, labelled *Turritella murrayana* Tate, showed a complete lamellose sculpture with very subjunctive spirals, recalling the South Anstralian *oxyacris* above noted, but was very much broader and was ranked as a variant of other shells showing no lamellose striations but simply very close spiral sculpture, much closer than any form of *gunnii*, though that species varies in breadth as well as sculpture.

250
(605) CROSSEA CONCINNA Angas, 1868.

This species was commonly found as dead shells in shell grit from a few feet of water at low tide, but a living specimen revealed a multi-spiral operculum of rather thick horny texture. This necessitates the transference of the species to the family Liotiidae and the proposition of a new genus, a view previously held from a criticism of the shell features alone. I propose Crosseola, with this species as type, and would temporarily range along with this the other globular Australian species classed as Crossea, e.g. carinata Hedley, naticoides Hedley, cancellata Ten.-Woods and consobrina May, and the fossils Crossea princeps Tate and C. semiornata Tate. The species (606) Crossea labiata Ten.-Woods, which Bell sent also, is a different group altogether, and its family location must remain doubtful until live specimens are examined. It has, however, still less apparent relationship with typical Crossea, and cannot be included with the above, so I introduce the new generic name Dolicrossea, naming C. labiata Ten.-Woods as type. The fossil Crossea sublabiata Tate seems only trinomially separable, while the fossil C. lauta Tate has no living representative yet on record (Trans. Roy. Soc. S. Austr., xiii., 1890, pp. 220-2, figs. on plate viii.).

(608) LIPPISTES TORCULARIS (Ten.-Woods, 1878).

Only one well acquainted with the literature of Australian marine molluses would have recognized the shell under this name, as nothing much more unlike the type of *Lippistes* could be found to bear that generic name.

I herewith propose *Icuncula*, with *Cingulina torcularis* Ten.-Woods as type, and question the matter of variability. Hedley allows two species, *torcularis* Ten.-Woods and *zodiacus* Hedley, and May has since described another, *L. consobrina*, comparing it with Brazier's gracilenta. Probably some of these will be lumped when series are available, as, allowing the same standard, *Lironoba australis* might be split into half a dozen.

Only one specimen was found in a dredging from 15 fathoms in Twofold Bay, and this I refer to the present species.

Referring to Lippistes, this generic name is older than Trichotropis and the family name would be Lippistidae. As to the name of the Victorian and South Australian species, the more writers, apparently, the more confusion. Hedley gave a note, based upon British information, and his nomination is incorrect. Pritehard and Gatliff (Proc. Roy. Soc. Vict., xviii., n.s., pt. 2, 1906, p. 55) accepting blainvilleanus Petit in place of their own gabrieli stated that Hedley then accepted the distinction between L. separatista Dillwyn and L. blainvilleanus Petit. At the same time, Verco reported upon these forms and accepted L. separatista upon E. A. Smith's assistance and recommendation. Since then, Smith altered his opinion and recorded *Lippistes helicoides* Gmelin, which is the correct name for Dillwyn's separatista, from Cape Colony, South Africa. This leaves the South Australian shell to bear Pritchard and Gatliff's name gabrieli as the only certain one, until actual comparison is made with the type of blainvilleanus. There appears to be little variation individually, and the named forms appear to be geographic representatives of full specific rank. In any case, the South African shell is clearly and constantly distinct from the South Australian species, and also from the Philippine shell studied by Verco, and now separated by Smith.

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS,

(623) STRUTHIOLARIA SCUTULATA (Martyn, 1784).

The recognition of the genus Tylospira seems necessary, inasmuch as fossil representatives of this form are known living alongside fossil forms of *Struthiolaria* s.str., thus proving the antiquity of the separation and, consequently, its generic value.

Under No. 30 Arca trapezia, I have quoted Dall's views, and here add his further conclusion "The estimation of values in such cases is liable to a large personal equation." I absolutely agree, and point out that as in this case, an ancient difference should have more value allotted to it than a recent one.

Tylospira was proposed by Harris (Cat. Tert. Moll. Brit. Mus., part i., 25 Mar. 1897, p. 222) with the present species named as type. The radula of *Tylospira* differs appreciably from that of *Struthiolaria*, and I hope to figure it later in conjunction with other comparisons of the fossil and recent forms of this group.

(624) ZEMIRA AUSTRALIS (Sowerby, 1841).

One of the greatest puzzles of Australian systematic malacology has not been solved by study of the radula. Dr. A. H. Cooke has published an account (Proc. Malac. Soc. Lond., xiii., Aug., 1918, p. 12), wherein he states that the radular characters of this strange mollusc are only comparable with those of *Oliva* and *Murex*, and suggests placing the species near the latter with generic (not subgeneric) rank. Of course he should have said Family rank, as obviously that was the correct value, on account of the abnormal shell and opercular characters.

Specimens from Disaster Bay, 10-20 fathoms, were a little larger with a lower spire than the ones from Twofold Bay in the same depths. I note this, as the Muddy Creek fossil Z. practursior Tate is differentiated by that feature, and there is no series of the fossil available. A family Zemiridae, next to the family Olividae, would best express our present knowledge of this form.

(628 A) NARICAVA VINCENTIANA (Angas, 1880).

Adeorbis vincentiana Angas, Proc. Zool. Soc. Lond., 1880, p. 417, Pl. xl., f. 9: Aldinga Bay, Gulf St. Vincent, S.A.—Vanikoro denselaminata Verco, Trans. Roy. Soc. S. Aust., xxxiii., 1909, p. 334, Pl. xxix., figs. 1-3: Gulf St. Vincent, S.A.— V. vincentiana, Verco, ibid., xxxiv., 1910, p. 118 (full account and synonymy).

This is an addition to the N.S.W. List, specimens having been sorted out of the Twofold Bay shallow-water dredgings.

(645) EPITONIUM GRANOSUM (Quoy and Gaimard, 1834).

Hedley (These Proc., 1901, 20 May 1902, p. 701) recognised Scalaria ballinensis Smith (Ann. Mag. Nat. Hist., Ser. 6, Vol vii., 1891, p. 139) from Ballina, N.S.W., as a synonym of Scala granosa (Q. and G.) which he considered "common, widespread and variable." He gave a figure of Smith's species (Pl. xxxiv., f. 21).

I have received shells from Port Fairy, Vic., which are all broader than a series from Cape Naturaliste, W. Aus., which may be regarded as typical of *granosa*, described from King George Sound. Roy Bell's collections from Two-fold Bay included specimens which were determined as *ballinensis* from Smith's types, and these are constantly separable from either of the other sets. I

advise, therefore, the reinstatement of *ballinensis* in the N.S.W. List in place of granosum.

As "granulosa Q. and G.," this species is the type of Granuliscala Boury, 1909, which will come into use, when work is undertaken on this group again.

(660) AUSTROTRITON PARKINSONIUS (Perry, 1811). (Plate xxxv., f. 4.)

When Kesteven wrote upon Lotorium (These Proc., 1902, p. 443 et seq.) he grouped with parkinsonianum, radiale Tate, abbotti Ten.-Wds., textile Tate, woodsi Tate and tortirostris Tate, Australian Tertiary fossils. He later gave figures (These Proc., xxxvii., 1912, p. 49 et seq., Pl. 1) of tortirostris, abbotti and parkinsonianum, dwelling upon their close relationship, concluding C. parkinsonianum is apparently the recent form of C. tortirostris. This is indisputable, but the examination of specimens from 50-70 fathoms off Green Cape provided an interesting complication. Obviously related to parkinsonianum, they differed a little in shape, narrower, longer spire, longer canal (Pl. xxxv., f. 4), and approximated more in sculpture to the fossil form. The series could be well named in the manner I am suggesting for such cases thus:

Austrotriton parkinsonius Perry. The shallow water coastal species. A. [parkinsonius] basilicus n. subsp. Deeper water relation. A. [parkinsonius] tortirostris Tate. The fossil form.

(667) CYMATIUM SPENGLERI (Perry, 1811).

As a synonym must be added *Triton* (*Cabestana*) boltenianus A. Adams (Proc. Zool. Soc. Lond., 1854 (8 May 1855), p. 311): Australia. This species was named from a specimen in the Mus. Cuming, now in the British Museum, and Angas recorded it in 1867 from Long Bay, Port Jackson, and presented specimens to the British Museum. When Hedley studied the British Museum Collection, he concluded that these were all extra-limital, as the species was unknown to Australian malacologists, and that some confusion of localities had taken place. From Port Fairy, Vic., Roy Bell sent a small dead shell and then from Mallacoota, Vic., another one came, but from Twofold Bay he sent a fine large shell, alive, which agreed exactly with the type of *boltenianum*, and I intended to reinstate it, when I found I could not easily distinguish the small ones from the admitted juveniles of *spengleri*. Hedley at once recognised the large shell as an aberration of *spengleri*, and I agree. The type of *barthelemyi* Bernard is in the British Museum and is another variation of this species.

(667 A) CYMATIELLA QUOYI (Reeve, 1844).

Triton quoyi Reeve, Conch. Icon., June 1844, Triton Pl. xix., f. 93: New Holland, Mus. Cuming.— T. verrucosus Reeve, ib., xvii., f. 71: Hab? Mus Cuming.—T. eburneus Reeve, ib., xvii., f. 69: I. Ticao, Mus. Cuming.

These three appear as distinct species in Tate & May's Census for Tasmania, while Pritchard and Gatliff lump the first two under the name verrucosus, and also accept eburneus as Victorian. The type of eburneus seems to me to be Philippine, as given by Reeve, and the other two represent two forms of one species, in which case verrucosus is the name for the species. As the slender form has been recognised as distinct, and I cannot determine the point. I am using the name quoyi for the form I now add to the N.S.W. List from Twofold Bay, dredged in shallow water, as my specimen is especially slender, but not as slender as the deep water form. I am introducing the new generic name Cymatiella, with quoyi as type, for these peculiar little Australian forms.

(682 A) PHALIUM PYRUM (Lamarck, 1822).

Cassis pyrum Lamarck, Hist. Anim. s. Vert., Vol. vii., 1822, p. 226: New Holland, i.e., East Tasmania; Kiener, Coquilles Vivants Casque, 1835, p. 39, Pl. 13, f. 25.—Semicassis paucirugis Angas (not Menke), Proc. Zool. Soc., 1877, p. 183. Twofold Bay.

The species of *Phalium* inhabiting extra-tropical Australia are of great interest, and I hope to monograph them shortly, as so many diverse views have been held as to the species and nomination. Roy Bell sent from Mallacoota many specimens of the present species and *C. semigranosum* Lamarck (named at the same time by Lamarck and probably collected by Peron in the same place simultaneously). From Twofold Bay he sent the present species and *P. labiatum* Perry (typically coloured, but a little more globose, apparently its southern limit) as shore and shallow water shells; from 25 F. a specimen of *P. stadiale* Hedley not quite typical, and from 50-70 F., off Green Cape, a young typical specimen of *P. stadiale* Hedley. The recent trawling expeditions have brought up many *C. thomsoni* Brazier, *C. sophiae* Braz., and *C. stadiale* Hedley, showing all these to be constant geographically and bathymetrically. I have collected a number of shore specimens, on the Sydney beaches, of *P. labiatum* Perry, all agreeing in coloration and form.

The present species was recorded as *S. paucirugis* by Angas from Twofold Bay; Hedley also collected it there, and now Bell has got it, and all the specimens are alike, showing little variation from the Mallacoota and eastern Tasmanian shells. From Kiener's figure of *C. pyrum* Lamarck, I should conclude the species was collected by Peron in eastern or southern Tasmania.

(691 A) NATICA SHOREHAMI Pritchard and Gatliff, 1900.

Natica shorehami Pritehard and Gatliff, Proc. Roy. Soc. Vict., xiii. (n.s.), Aug. 1900, p. 131, Pl. xx., f. 4: Port Phillip, Victoria. A few small shells were sorted out of shallow water dredgings in Twofold Bay, N.S.W., along with N. subcostata Ten.-Woods (which ranged in size to 13 x 11 mm.), each with the operculum, that of the former being as yet undescribed, and is here stated to be solid, shelly, smooth, showing a slight prominence following the initial whorling, while there is a very obscure sulcus near the edge. This would place the species in the genus *Cochlis* Bolten, Museum Bolten, 1798, p. 146, accepting *C. albula* Bolten as type, the typical Natica having the sulcate operculum like that of N. subcostata Ten.-Woods.

(702) SINUM PLANULATUM (Recluz, 1843).

This is referable to Sinum, but the specific name is not acceptable. Sigaretus planulatus was published by Recluz in Illustr. Conchyl. (Chenu), in his Mon. Sigaret (p. 21) and figured (Pl. 3, fig. 4). His specimen came from "Hes Séchelles, au port Mahé," and he attached to it "Gualt., Index test., 1742, Pl. 69, fig.. F. inferior," as depicting his species. On p. 1 of his Monograph, he had introduced Sigaretus planatus for the Gualtierian species. Chenu's Illustrations appeared piecemeal, and a collation has been prepared by Sherborn and Smith, and published in the Proc. Malac. Soc. Lond., ix., Mar., 1911, p. 264 et seq. From this we get the information

Sigaretus,	pp. 1-4	Pls. 1-2	in part 5	recd. British Museum	11.5.1843
	5-8	8-10			10. 8.1843
	9-12	16			7.12.1843
	13- 20	22			7. 3.1844
	21 - 24	25		apparently	5. 6.1844

From this it would be concluded that the name must be *planatus*, and if the Seychelles shell is different from Gualtier's species, another name must be used for it.

Later in his "Catalogue" of the species of Sigaretus (Journ. de Conch., ii., 1851, p. 163, et seq.) Recluz records his *planulatus* from the Philippines, and adds his *gualterianus* olim as a synonym.

For the species named zonalis by Quoy and Gaimard, Tryon used Lamarck's Sigaretus laevigatus (Hist. Anim. s. Verteb. Vol. vi., pt. 2, Apr., 1822, p. 208) from the seas of Java, and adds as synonym Sicaretus (sic) australis Hanley (Conchologist's Book of Species, 1840, p. 57, frontispiece plate, f. 3). In the 2nd revised edition, Hanley added an Index with names of authorities and localities, and there (p. 153) this name is credited to Gray and South Seas is given. Shells in the British Museum labelled "australis Hanley" from the I. of Luzon, which may be the types, are easily separable from zonalis Q. and G., but belong to that group, which differs from the planulatus series, also shown from the I. of Luzon. It is interesting to note that Recluz, the monographer of this group, always separated the shells into two series, and at first sight this seemed splitting, but upon fuller knowledge it shows great insight, and a detailed investigation of the anatomy of these two groups would be interesting. The radula of the whole series is peculiar, but there are too few specimens in the Gwatkin Collection to make any comparison of value. I have, however, a few shells sent by Roy Bell with their animals, and I will later report upon their radulae.

Since this was written, Robson has given a short account of the external characters of *Sinum planulatum* (Recluz) (Proc. Malac. Soc. Lond., xv., 1923, p. 268-269), but appears to be ignorant of Quoy and Gaimard's figures of their *C. zonalis* (see post), nor does he quote Recluz' excellent figures (loc. cit.).

(702 A) SINUM ZONALE (Quoy and Gaimard, 1833).

Crysptotoma (sie) zonalis Quoy and Gaimard, Voy. de l'Astrol., Zool. Vol. ii., 1833, p. 221, Pl. 66 bis, figs. 1-3: Garden Island, King George Sound, W. Aust.

This Adelaidean species has drifted round the corner, occurring in shallow water dredgings from Twofold Bay, and being an addition to the N.S.W. List.

(703) SINUM UMBILICATUM (Quoy and Gaimard, 1833).

The more common shells give the most trouble and the present species is a good instance. Recently a lumping policy has been adopted, but a revision seems necessary. Verco has described a deepwater representative of this species from South Australia, and the shells from 60-70 fathoms off Green Cape, N.S.W., are distinguishable from the shore and shallow water specimens by being depressed and flatter. However, shallow water South Australian shells seem more conical, with a smaller mouth and smaller umbilicus than Tasmanian shells, while these are much larger than any of the N.S.W. specimens. There are four names at present available, umbilicata, globosa, picta and albosutura, the last named being regarded as very distinct. The type locality of *umbilicata* has not yet been fixed, but I here designate Tasmania, where Quoy and Gaimard collected, and where it is a common shell.

The name *pictus* can then be used for the South Australian form, and I propose to differentiate the Peronian forms. However, the generic name must be first fixed. In the Check List, Hedley has placed the species under Sinum, which is obviously undesirable, as the animal is retractile, while that of Sinum is not; moreover, this species is "umbilicata," whereas Sinum shows the very opposite. Pritchard and Gatliff and Verco have used Eunaticina, which is conchologically preferable, but the shell features still do not agree. I therefore concluded that a new generic name was necessary, but thought examination of the radulae in the Gwatkin Collection might prove interesting. The species of Polinices I examined, such as conica, plumbea, melastoma, all showed a rhachidian tooth, with three large practically even cusps. The radula of Sinum, as shown by zonalis, has a tricuspid rhachidian, but, while the two side cusps are long, the central cusp is short, only about half the length: this is characteristic of Sinum. The radula of picta sent by Verco from St. Vincent's Gulf, S. Aust., at once showed a notable distinction as, though the rhachidian might still be termed tricuspid, only the central tooth was strongly developed, the side cusps only showing as minor projections near the base. The radula of papilla, the type of Eunaticina, is nearest this, but is recognisable and well differentiated by means of its unicuspid rhachidian. I have just indicated the above differences, but they are supported by the shape of the base of the rhachidian tooth, the size and shape of the laterals and marginals.

Consequently, the necessity of distinguishing the present species generically is proven, and I propose the new generic name *Propesinum*, and would name the New South Wales sub-littoral form *Propesinum umbilicatum minusculum*, n. subsp., as being smaller, with less elevated spire, columella more reflected, umbilical cavity narrower, and the deepwater form, from 50-70 fathoms off Green Cape, *P.* (*u*) *mimicum*, n. subsp., as being still less, more flattened, umbilical cavity wider, etc. This might be contrasted with *albosutura*, thus *P.* (*albosuturum*) *mimicum*.

> (706) CYPRAEA ANGUSTATA COMPTONI (Gray, 1847). (706 A) CYPRAEA ANGUSTATA PIPERATA (Gray, 1825).

Specimens were received in numbers, as dead shells, from Tellaburga Island, Vie., and a few from Twofold Bay, N.S.W. Confirmation of the data given for the name necessitates the absolute rejection of *angustata* in any sense. Vereo (Trans. Roy. Soc. S. Aust., xlii., 1918, pp. 140-144) has given an excellent review of the forms of the species, but he did not discuss the determination of Gmelin's name. I find that Gmelin's sole basis of his *Cypraea angustata* (Syst. Nat., Vol. i., pt. vi., 1791, p. 3421) was "Gualt. test. t. 13 f. QQ" from unknown habitat. Gualtier's figure does not represent our shell, and it was published in 1742, long before any South Australian shells reached Europe. Its acceptance is apparently due to J. E. Gray, who added the locality "New Holland," and noted it had been ignored by the French writers, at the same time as he correctly described *Cypraea piperita* (Zool. Journ., i., Jan., 1825, p. 498), also from New Holland. Sowerby (Conch. Illus., 1832, sp. 100, p. 10, f. 24) when he figured *piperita* gave New -South Wales, and at the same time referred *angustata* Gmelin to South Africa.

The specific name will then be *Cypraea piperita* Gray, 1825. Hidalgo (Monog. Gen. Cypraea, Mem. Real Acad. Cien. Madrid, 1907, pt. 2) used (p. -

254) Gmelin's Cypraea angustata for the Australian shell, citing Cypraea maculata Perry (Conchology, 1811, Pl. xx., f. 5) as a synonym. Perry's shell was simply localised as Eastern seas, the coloration is poor, the size is too big, and there is apparently a prior C. maculata (Encycl. Metrop., Pl. 14) published in 1810. Gray's C. comptoni was described from Port Essington and, if that locality be incorrect, it came from southern Tasmania, and would be applicable to the form living there, which has several varietal names, correctly recorded by Verco.

(709) CYPRAEA ARMENIACA Verco, 1912.

Verco fully discussed the species umbilicata, with its western representative, when he varietally proposed the above name. Since then the eastern species has been trawled in numbers, so that a better idea of its variation can be gauged. After examining a large series, I would allow C. armeniaca Verco specific rank, as it appears more distinct from the eastern hesitata (i.e., umbilicata olim) than some of the fossil relations from the Muddy Creek beds. The variation used for the separation of such fossils as C. eximia Sowerby, C. toxorhyncha Tate and C. sphaerodoma Tate may be due to their receipt from different horizons, or even simply individual variation. The recent hesitata varies in size and shape, but I have not seen one which showed so much altitude as Verco's measurements, or with so obscure a "snout" for the size. Tate regarded the fossils as scarcely referable to Jousseaume's Umbilia, founded on the recent umbilicata, but I would regard the series as closely related, and, further, that they would come into a larger group centring in scotti, which Jousseaume named Zoila, and I would use Zoila generically and Umbilia subgenerically for these strange coldwater umbilicate "living" and "dead" fossils. In their latest Alterations, Gatliff and Gabriel (Proc. Roy. Soc. Vict., xxxiv. (n.s.), May, 1922, p. 141) have correctly separated armeniaca specifically, but have used, for the eastern form, Cypraea alba ex Cox with a var. hesitata. Cox's name was only proposed varietally, and in this sense was preoccupied in the earliest illustrated Monograph of Cypraea three times, viz., Cupraea spurca var. alba Sowerby, Conch. Illus., 1832 and 1837, p. 6, p. iii.; C. turdus var. alba Sow., ibid.; C. lamarckii var. alba Sow., ib., p. iv.

(735) TRIVIA AUSTRALIS (Lamarck, 1822).

Introduced as *Cypraea australis*, I find Lamarck had been anticipated by Schroeter (Archiv. Zool. (Wiedeman), iv., pt. i., 1804, p. 10), and I also note no synonyms. *Cypraea rosea* is sometimes noted as of Duclos, cited by Potrez and Michaud (Galerie des Mollusques Douai Vol. i., Oct., 1838, p. 477), where it appears as a synonym of *C. australis* Lam., but it is antedated by *Cypraea rosea* Wood (Index Test., Suppl., 1828, p. 9). I am describing as a new species:

TRIVIELLA MERCES. (Plate XXXV., f. 16-17).

Well known under the name Trivia australis (Lamarck).

Shell of medium size for the genus, mouth fairly wide, aperture longer than the spire and body whorl; spire noticeable as an obsolete bump overlaid by the spiral body sculpture which consists of narrow ridges about one-third the width of the interspaces, which are smooth or only slightly transversely scratched; a smooth patch exists on the back until senile. Twenty-four ribs denticulate the outer lip and about sixteen the inner lip. Length 14 mm.; breadth 9.5 mm.; height 8 mm.

Common on the littoral of New South Wales.

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS,

(754-765) Family VOLUTIDAE.

Roy Bell sent me specimens of the species No. 755 and 761 only, but, as I have a few notes on the nomination of the group, I take this opportunity of recording them. Lamarck wrote in error Voluta ondulata when describing his species from Bass Straits and Ile Marie, Eastern' Tasmania. Bell's specimens from Twofold Bay are consequently typical and V. angasi Brazier is an absolute synonym, the wrong form being named, that from Port Lincoln and the Great Australian Bight requiring a varietal designation. It may be of interest to note that Peron called this species Voluta undulosa, and, peculiarly, the same change in the ending of the name given by Solander appears in literature, his name being given sometimes as fluctuata, and at others as fluctuosa, but in each case no description was offered.

Voluta maculata Swainson (Appendix to Bligh Cat. Shells, 1822, p. 11), regarded as the type of *Scaphella* by Hedley, must be renamed, as there is a prior Voluta maculata Mensehen (Zoophyl. Gronov., fasc. iv., Index, 1781). I propose to rename it *Scaphella caroli*.

No. 757.—An earlier reference for *Voluta magnifica* is Shaw (Nat. Miscell., xix., 1808, Pl. 812).

No. 759.—Voluta punctata Swainson, 1823, was anticipated by Allan (Trans. Roy. Soc. Edinb., viii., 1818, p. 461, ex T. Brown MSS.) for a Nice fossil. This recent shell I rename Cymbiola complexa.

An extralimital form must also have a name-change, viz., Lyria mitraeformis ex Voluta mitraeformis Lamarck, a northern Tasmanian and Victorian shell, as Lamarck in his choice had been anticipated by Broechi in 1814, but fortunately there is an excellent alternative in Voluta multicostata Broderip (Zool. Journ., iii., 1827, p. 82) from unknown locality, the excellent figure (Pl. 3, f. 2) being unmistakable.

(768) OLIVELLA LEUCOZONA A. Adams and Angas, 1864.

Many specimens were collected in the shallow water dredgings in Twofold Bay, and, though showing variation in size and shape, agreed with the types of *brazieri* Angas, which Hedley regarded as a variety. The type locality of *leucozona* was Port Jackson, while *brazieri* was named from Newcastle, and, if these were geographical variants, my shells should have been nearer the type series. While puzzled, I secured Brazier's copy of his reprints of Angas's papers and found therein the information "Jervis Bay, 10 Fathoms, Angas wrong with locality" in Brazier's handwriting, the name Newcastle being crossed out. Brazier apparently also told Whitelegge this, as the latter simply wrote Jervis Bay in his List, *but without any remark*. The species *exquisita* Angas was not found by Bell, but described from Coogee Bay, I find it in shell sand from this place, and it appears strictly congenerie with the present species.

As regards the generic name, Olivella cannot be maintained. This was proposed for American shells, and Dall has discussed the groups (U.S. Geol. Survey, Prof. Paper, No. 59) without mentioning the Austral forms. At sight these differ from American shells, the name of the type, *biplicata*, referring to the columella, recording an obvious difference. Unfortunately, the Australian species, though so few in number, do not constitute a homogeneous assembly, the small, thin, unicoloured shells, conchologically, being generically separable from larger solid coloured ones. To determine this matter definitely, I handed specimens to my friend, Lieut.-Col. Peile, who found such great differences that he recorded them (Proc. Malac. Soc. Lond., xv., 1922, p. 18), making a few remarks, while

proposing the new genus Belloliva for Angas's brazieri. Thus the conclusions formed by study of geographical factors and shell features are confirmed by this radular examination, and the latter in its turn furnishes a clue to the affinities of one form, while inviting further research as to the relationship and reason of the other. The teeth of brazieri may be compared with those of Oliva, whereas the general features of the radula of nympha are those observed in Olivella. There are minor differences, but the obvious distinction is in the form of the central tooth or rhachidian. In brazieri this is tricuspid like that of Oliva, while that of nympha is multicuspid, recalling that of the American Olivella. Oliva has, however, no operculum, whereas Olivella possesses a well-formed operculum, which is seen in both brazieri and nympha. It is here suggested that Oliva has evolved from an Olivelloid ancestor, the tricuspid rhachidian being of later origin than the multicuspid form, while the loss of the operculum is also due to specialization. Then we may regard the present Olivellas as remnants of a large family, persisting only on the outskirts of the range, and retaining the more primitive radula and operculum. We then see in Belloliva an Olivella, which, retaining its operculum, has developed an Oliva radula. As noted above, exquisita, from shell characters, may be placed in Belloliva, but pardalis A. Ad. and Ang. = triticea Duclos, differs a little in shell characters, as also in radular features, though generally agreeing with *Belloliva*, and the differences may be indicated by a subgeneric name Gemmoliva. However, nympha, which Peile showed to have the general radular features of the American Olivella, is conchologically very different from the type of Olivella, and must be named generically, the genus Cupidoliva being proposed for it as type. This species apparently shows great variation in size and shape, and my series suggests that Verco's Olivella solidula may be the Adelaidean representative of nympha, though it was not compared with that species.

(771) ANCILLA CINGULATA (Sowerby, 1830). (Plate xxxvi.).

This species apparently is included in Hedley's Check List from a northern locality, as I collected it at Caloundra, Queensland, and it is not included in Roy Bell's collections. I have been puzzled in the determination of the series sent by him, as no fewer than six different forms appear, and Hedley had only ad-After much trouble I have arrived at somewhat different conmitted three. clusions from those generally accepted, but I am not satisfied that the truth is known regarding these molluscs. Some years ago, I considered the generic name to be used for these Austral species and here give my results. In the British Museum cases the species are arranged under four genera as follows, Ancilla Lamarck, Sandella Gray, Eburna Lamarck and Sparella Gray. To the former were allotted all the southern Australian species such as cingulata Sow., oblonga Sow. and australis Sow. I found that the type of Ancilla was a species placed under Sparella, and consequently a transference of names was necessary. I also noted that Amalda had been proposed prior to Sandella and must be used. I have already recorded this point in connection with tropical Australian molluses. I then consulted Fischer's Manuel, and noted that he had provided Baryspira as a sectional name for A. australis Sowerby and A. glandiformis Lamarck, Miocene. In order to avoid confusion, I here designate A. australis Sowerby as the type of Baryspira. The Neozelanic series certainly show slight conchological differences from the Australian groups now under discussion, but at present I would advise the use of *Baryspira* generically for the Austral species The shells are quite easily separable by concommonly ascribed to Ancilla.

chological characters, and I have examined the Gwatkin Collection of Radulae, now in the British Museum, and find that the observed differences are confirmed by separative features in that item. I was able to class the radulae in groups which agreed with the shell groupings. The complete quotation of the generic name Baryspira is Fischer, Manuel de Conchyl., fasc. vi., 20 Dec., 1883, p. 600. Type (by subs. desig., Ire., 1924) A. australis Sow. I now pass on to the consideration of the determination of the specific names. From New South Wales Hedley has recorded only A. cingulata Sow., A. edithae Prit. and Gat., and A. oblonga Sow. The Victorian List reads A. lineata Kiener, A. marginata Lam., A. oblonga Sow., A. petterdi Tate, and A. edithae P. and G. Tate and May included from Tasmania, A. marginata Lam., A. oblonga Sow., and A. petterdi Tate. What each has meant by these names I cannot exactly determine from the British Museum collection and literature. A. edithae seems plain, as there are specimens in the British Museum so named, presented by the authors, but I did not get this species in the collections sent by Roy Bell, though Hedley has recently recorded it from very near this place. A. petterdi Tate, I have identified from Tate and May's figure as a species sent from Port Fairy, Vic. A shell found washed up on the shore at Port Fairy, Lakes Entrance, and Mallacoota, Vic., and dredged in shallow water in Twofold and Disaster Bays, N.S.W., was identical with a series which has been named by Hedley A. marginata var. tasmanica Ten.-Woods. These came from Port Phillip, Vic., and I accept this name upon this identification.

The next point was the recognition of Ancillaria oblonga Sowerby (Spec. Conch., Vol. i., pt. i., Nov., 1830, p. 7, figs. 38, 39, on Pl. 3) from New Holland, received from Port Jackson. The very good description and figure quickly determined this species as the one of which I had a very narrow form from 15-20 fathoms, Twofold Bay, but probably as quite different from current acceptance in Tasmania and southern Victoria. Pritchard and Gatliff included it on Watson's identification of Challenger shells (which I have examined) which are from Sydney Harbour, as given at the place quoted, and not Victoria. Tate and May cited it as equivalent and prior to A. fusiformis Petterd (Proc. Roy. Soc. Tasm., 1885 (1886), p. 342), which, according to the description, has little affinity. Sowerby definitely stated "no carinations on the spire," while Petterd wrote "spire spirally striated above and below the suture." Verco recorded oblonga from 100 fathoms 90 miles west of Eucla, W.A., adding "Mr. Gabriel has sent me two examples dredged in Western Port." As he gives, fide Tate and May, A. fusiformis Petterd in his synonymy, no certainty can be arrived at in this case even. Upon this record Hedley included A. oblonga Sow. in his W.A. List, but also included A. lineata Kiener, citing A. monilifera Reeve as a synonym. Kiener's shell closely resembles Sowerby's oblonga, and apparently came from Western Australia, whence many specimens are in the Australian Museum. In the British Museum, I accepted Reeve's types of his A. monilifera from Swan River as a distinct species from Sowerby's A. oblonga, and, as Kiener's name A. lineata had been used previously by Perry (Conchology, 1811, Pl. xxxi.), Reeve's name may be used. Sowerby's species A. oblonga should be crossed off the W. A. List, as I regard it as the eastern representative of Reeve's species only. Verco's beachportensis appears to be a deepwater form of petterdi, while Hedley's A. coccinea is a deepwater shell from Western Australian waters very different from any other species. These resolve themselves thus: A. tasmanica Ten.-Woods, a form which seems constantly separable from A. marginata Lamarck and apparently frequents very shallow water, as dead shells appear on the beaches and were sent

from the Victorian localities as picked up on shore, as well as from Twofold Bay, where specimens were also found in the shallowest dredgings, 5-10 fathoms, and Disaster Bay in 10-20 fathoms. Ancilla fusiformis Petterd (Plate xxxvi., f. 10) appears to be the name of the commonest form in the dredgings, occurring in 10-20 fathoms off Gabo Island, and in Disaster and Twofold Bays in the same depths, while one live and some dead ones occurred in the deepwater dredgings 50-70 fathoms off Green Cape, N.S.W., together with a fragment of a more heavily sculptured spire. A peculiarly elongate form (Plate xxxvi., f. 9) was dredged in 18 fathoms off Merimbula, and this agrees with the Challenger shell from Station 163 B (Port Jackson 30-35 F.), recorded by Watson as A. oblonga Sow. This I am not describing as a new species, though I find the Muddy Creek fossils in the British Museum named Ancilla papillata Tate are very like the shell I have determined as *fusiformis*, but differ a little in shape. The difference between the two recent forms above recognised is much more marked than between the recent and fossil forms from practically the same locality, as this species (fusiformis) apparently occurs also in Bass Straits; I have received it in a single dredging of 12 fathoms depth off Gabo Island, Vic. I here name the Merimbula shell figured (Plate xxxvi., fig. 9) Baryspira fusiformis gaza, n. subsp. In looking up these species in the Monographs I noted Reeve's remark: "Mr. Cuming never met with the genus in all his dredgings, except in the form of a single small species at the Philippine Islands." In the present instance these animals occur in very many dredgings, but never numerously, and often dead. Apparently they are generally buried in the sand as this is their custom when the dredge passes over, and they may feed at stated intervals. Upon recomparison, the deepwater shells above mentioned approximate more nearly to the fossils than the shallow water ones do.

More study of more material has suggested the separation of the Australian species subgenerically as *Alocospira* Cossmann (Essais de Paleoconch. comp., 3rd livr., 1899, p. 92) which has the fossil *A. papillata* Tate, as type, including therein the smooth species, such as *marginata* Lam. These appear to intergrade, though both are represented in the Muddy Creek and Table Cape fossil series, with many so-called species, which must be studied in conjunction with these recent forms.

(774-800) Family MARGINELLIDAE.

As usual, many species of this family turned up, about twenty-five species having been already separated. These were submitted to my friend Mr. J. R. Le B. Tomlin, and I had hoped to have included here a rearrangement of the Austral species into groups, so that someone, save a *Marginella* specialist, might attempt to determine the species without considering every Marginellid name. In the meanwhile, I can add to the N.S.W. List five species:

Marginella tasmanica Ten.-Woods, Papers Proc. Roy. Soc. Tasm., 1875 (21 Mar., 1876), p. 28: Long Bay, Tasmania. This was found below dead low-water mark at Twofold Bay, N.S.W., associated with *M. muscaria* Lam., while from 50-70 fathoms off Green Cape were sorted:

Marginella dentiens May, Papers Proc. Roy. Soc. Tasm., 1910, p. 384, Pl. xiii., f. 6: 100 F. off Cape Pillar, Tasmania.

Marginella gabrieli May, ib., p. 386, Pl. xiii., f. 9: Same loc.

Marginella gatliffi May, ib., p. 385, Pl. xiii., f. 8: 40 F. off Schouten I., Tas. Marginella caducocineta May, ib., 1915 (24 Feb., 1916), p. 88, Pl. ii., f. 11: 40 F. off Thouin Bay.

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS,

(802) CANCELLARIA AUSTRALIS Sowerby, 1832.

The name given in the synonymy, *Cancellaria undulata* Sowerby, must be used, as May has already pointed out (Illustr. Index Tasm. Shells, 1923, Appendix, Ref. to Pl. xxxiv., No. 1). Sowerby's name was given to a Tasmanian shell, but the Sydney form does not appear to differ much from the specimens so far studied.

I hope to review the species of this family admitted in the southern Australian fauna, but in the meanwhile No. 805 must be removed from Admete back to *Cancellaria* sensu lato, and it must be given specific rank, as quite distinct from the fossil *micra*; the small specimens, compared by Hedley with the type of *micra*, may not be conspecific with the type of *scobina*, and I do not regard them as conspecifie with the fossil *micra*, but very close to *exigua* Smith, which would be placed next to *stricta* Hedley, and arranged alongside some of the small fossils such as *micra*.

(813 A) TEREBRA USTULATA Deshayes, 1857.

Terebra ustulata Deshayes, Journ. de Conch., 1857 (July), p. 97, Pl. iii., f. 12: Van Diemen's Land. Mus. Cuming.

From Twofold Bay four species of *Terebra* were dredged in varying depths, but a single dredging in 10-20 fathoms in Disaster Bay brought up a hundred specimens of a different species, which has been determined as above and which is an addition to the New South Wales fauna. Later, an odd dead shell was found in Twofold Bay dredgings, so that it does reach that bay.

The species has been placed by May, following Hedley, under the genus Duplicaria Dall (Nautilus, 21, Mar., 1908, pp. 124, 125), provided for Terebra duplicata Lam. Dall later noted that Rafinesque had long previously proposed Duplicaria (Atlantic Journal, No. 5, 1833, p. 165) for a different object, so amended his name to Diplomeriza (Nautilus, 33, July, 1919, p. 32). Bartsch has recently shown (Nautilus, 37, 1923, pp. 60-64) that some of the so-called Diplomeriza have two folds on the columella, and has proposed to separate these under Hind's name Myurella, introducing Myurellisca for the species confused with Lamarck's duplicata, which he distinguished as Myurella (Myurellisca) duplicatoides (p. 64) from Ceylon.

Bartsch has written "Considerable time was required running down references to names and verifying type designations. To save future students of this task a chronologically arranged list of names supplying this information is here appended." Such a statement would suggest accuracy which is belied by the published conclusions. Thus Dall wrote Acuminia and Oxymeris, but Bartsch quotes Acuminea and Oxomeris, and on p. 63 he named, as type of his new subgenus Myurellisca, "Terebra (Myurellisca) duplicatoides Bartsch described below" but on the next page "Myurella (Myurellisca) duplicatoides" is described. Probably also this new (?) species has been named previously, as there are several synonyms. Again, Bartsch eites names as of Lamarck which had been described before Lamarck's time: this is confusing, but when he writes that the type of Mazatlania Dall is "Terebra aciculata Lamarck" and there is no such species, it seems unnecessary to continue this note, and simply to ignore Bartsch's Key, and make an independent review. This is not my purpose, but, in order to stabilise some Australian forms, I propose to separate the species grouped round ustulata Deshayes as a new genus *Pervicacia*, using that well-known species as type. There is only the basal twist of the columella to represent a fold.

The species T. brazieri Angas was represented at Twofold Bay by a longer

narrower form which varied from almost smooth to well ribbed (Plate xxxvi., f. 6-7), and would fall, according to Bartsch's Key, under *Hastula*, whereas the species has been suggested to be a variety only of *T. lanceota* Linné, the type of *Acuminia* Dall (Nautilus, 21, Mar., 1908, pp. 124-125), which name may be used generically for the Austral species. I note *Terebra leptospira* Tate (Trans. Roy. Soc. S. Aust., 1888, p. 163, Pl. viii., f. 15a, b) from Muddy Creek appears very close to *A. brazieri* Angas, while *Terebra subspectabilis* Tate (loc. cit., p. 162, Pl. ix., f. 11) seems closely related to *P. ustulata* Deshayes. Comparisons should be made.

(813 B) PERVIÇACIA ASSECLA, n.sp. (Plate xxxvi., f. 16).

Shell elongately subulate, rather thin, glossy, last whorl about one-third the length of the shell, mouth oval, canal short and open. Colour pinkish-white with fulvous spots below suture and darker fulvous on basal part of last whorl: sometimes suffused with fulvous throughout. Apical whorls two, smooth; adult whorls ten, sutures impressed, longitudinally ribbed, the ribs being interrupted by a smooth concave depression, sinuous and eighteen in number on the penultimate whorl: on the last whorl the ribs are prominent on the periphery, continuing, but fading, on the base which is rounded. The mouth has the outer lip thin, sinuate through the lack of sculpture below the suture, the columella straight, anteriorly a little bent but showing no folds. Length of type 28 mm., breadth 9 mm.

Dredged in Twofold Bay, N.S.W., in from 10-25 fathoms.

Superficially resembles *P. ustulata* (Deshayes), but I have seen no other Australian Terebrid that can be compared.

(823) Conus Maculosus Sowerby, 1859.

A perplexing complex is here exposed, as Roy Bell sent a fine lot of so-called anemone from Port Fairy, Vic., where I have since collected it. Previously he had sent a similar species from Lord Howe Island and later sent a few specimens from Twofold Bay, N.S.W. I have collected specimens at Long Reef, near Manly, but these all differed notably and suggest to me a distinct species, though Hedley has only allowed them varietal rank. In any case the name to be used must be revised, and I find that Conus maculosus Sowerby dates from the Conchological Illustration, Pl. 3 and 3^{*}, published 29 Mar., 1833, where it is said to have come from the Island of Capul in the Philippines, and the figures are not like either the Port Fairy or Sydney shells. It is needless to pursue this item further, as the name is preoccupied by Bolten (Mus. Bolten, pt. ii., 1798). The next name cited by Hedley, viz., C. jukesii Reeve (Conch. Icon., Vol. i., Apr., 1848, Conus suppl. Pl. 2, f. 278) though localised as from North Australia is undoubtedly the Sydney shell, and would be available were it not that Sowerby had figured (Conchological Illustrations, pt. 56, 30 Apr., 1834, fig. 79) a shell (the figure numbered 70 in error) which is easily recognizable as the same species. In the Lists issued with the plates, Sowerby named this Conus papilliferus, and the name would have been lost, save that in the Catalogue issued when the Monograph was completed, he had noted that this name had been given, as he there concluded the figured shell was "C. maculosus, test. jun.?" In 1859, at the place cited by Hedley, Sowerby used the name maculatus for his previously named maculosus, whether intentionally or not is unknown. The majority of the specimens from Botany Bay to Port Stephens in the Australian Museum are typically C. papilliferus, but there is one set presented by Miss L. Parkes from Middle Harbour,

RESULTS FROM ROY BELL'S MOLLUSCAN COLLECTIONS,

which are like the Twofold Bay shells. These agree with the Port Fairy series in general appearance and have lower spires and are smoother than the typical *anemone* Lamarek. Since Hedley wrote his account of this species, the Australian Museum has received specimens from Kangaroo Island, which agree most exactly with Kiener's figure (Coquilles Vivants, Conus Pl. 46, fig. 3) of Lamarek's shell. This leaves the name *Conus novaehollandiae* A. Adams for the Western Australian shell, as Monte Bello Island specimens agree very closely in shape and sculpture with the figures in Thes. Conch., sp. 268, f. 298-299.

May has figured (Illus. Index Tasm. Shells, 1923, Pl. xxxiv., f. 16), under the name *Conus anemone* as "common all round the coast," a shell which does not agree exactly with typical *anemone* and which may bear Tenison-Woods's name of *carmeli* (Proc. Roy. Soc. Tasm., 1876 (1877), p. 134: North Coast Tasm.) given to a coronate variety.

Brazier named *Conus remo* (These Proc., xxiii., 1898, p. 271) from San Remo, Vie., and *Conus flindersi* (loc. eit., xxii., 1897, p. 780) from Flinders, Vie., which Pritchard and Gatliff declare to be synonyms of this species, the latter being described as coronate and therefore like *carmeli*, the former being a deeply sulcated variation approaching typical *anemone*.

(885 B) TELEOCHILUS ROYANUS, n.sp. (Plate xxxiv., figs. 6-7).

This genus was proposed by Harris (Cat. Tert. Moll. Brit. Mus., Part I. (Austral Tert. Moll.), (publd. ante 25 Mar.) 1897, p. 64) for the fossil species, named by Tenison-Woods, *Daphnella gracillima* (Papers Proc. Roy. Soc. Tasm., 1876 (27 Feb., 1877), p. 106) from Table Cape, Tasmania. This was figured by Ten.-Woods (These Proc., iii., pt. 3, 1878 (1879), p. 226, Pl. xx., f. 10) and also by Harris (loc. cit., Pl. iii., figs. 12c, d). I picked out two dead shells inhabited by hermit-crabs, which attracted by their strange facies, "Conomitroid without any plaits." These are smaller than the fossil shells, but are obviously the recent representatives, in which the longitudinal ribbing is more pronounced and the spirals are more depressed, while they are less regular.

The apical whorls are minutely punctate (f. 7) as shown in Harris's figure, and the succeeding whorls are obsoletely longitudinally ribbed and transversely scratched, a couple of transverse ridges being more prominent below the suture, which is slightly canaliculate; the aperture is longer than the spire. Length 16 mm.; breadth 6.5 mm.

Dredged in 10-25 fathoms in Twofold Bay, N.S.W.

This is the most interesting species found by Roy Bell, and, until the animal is examined, its classification must remain obscure. As noted above, the only specimens I have seen were dead, but this may be the same thing as recorded by Gatliff and Gabriel from Bass Straits as *Daphnobela* sp., in which case live specimens may soon turn up.

The genus *Teleochilus* was subordinated by Cossmann, who was followed by Tate, to *Daphnobela*, a genus proposed for a Bartonian Eocene fossil, which seems to have no relationship. Hedley recently proposed to use *Teleochilus* for a different series of shells, about which I will write later. *Teleochilus* is here placed at the end of the family *Turridae*.

(886) FASCIOLARIA AUSTRALASIA (Perry, 1811).

This is a difficult species. Hedley has allowed three varieties, typical, *bakeri* and *coronata*. A series from Port Fairy, Vic., is of the smooth typical form,

and shows no variation, while a lot from Twofold and Disaster Bays, N.S.W., are all larger and *coronata*, but with these from Disaster Bay came a specimen quite different, and which I thought might be *bakeri*, but it does not agree exactly with shells sent to the British Museum by the authors as that form. I have since more carefully examined these series and give my conclusions as a basis for future work.

All the shells from Twofold and Disaster Bays were dredged in from 10-20 fathoms of water. No shore shells were sent, and the previous records of this species from New South Wales also refer to dredged specimens. All these are coronata save the bakeri specimen. From Lakes Entrance, Vic., a few dead shells were sent which prove to be also coronata. From Port Fairy many shells were sent, all secured living about low water mark and these are all obviously different, being non-coronate. In the British Museum, Tasmanian shells are shown as coronate, South Australian shells as non-coronate. Verco has stated that both coronate and non-coronate forms occur in South Australian waters, but as he did not discriminate between shore shells and dredged specimens, it may be that the former were like the Port Fairy shore shells, non-coronate, while all the coronate forms were dredged. Investigation of the subject from the point of view here presented is suggested. It should be noted that Lamarck's coronata, from Kiener's figure, is like the dredged New South Wales specimens, but is more like the Tasmanian shells, and while Perry's figure of australasia agrees fairly with the Port Fairy shore shells. Perry's localities read "A native of New Holland and Van Diemen's Land" while Lamarck recorded "près des iles King et des Kanguroos." I suggest a reconsideration of the forms should be undertaken in connection with the radular characters. Typical Fasciolaria is the North American tulipa, conchologically dissimilar from the present species. More like the Australian coronata is the tropical trapezium, for which Fischer proposed the sectional name Pleuroploca.

Over twenty years ago, Verco gave figures of the radulae of South Australian Fusoid shells, and recently Claude Torr figured the radulae of Fasciolaria australasia and fusiformis from South Australian material. These figures do not agree exactly with radulae in the Gwatkin Collection from Victoria and Tasmania, nor with specimens from the present collection. There is no series of such preparations to determine the variation and decide whether it be individual or geographic. All the Australian radulae agree in showing fewer cusps on the laterals than the typical Fasciolaria or Pleuroploca. As there is so little difference in the radulae seen in this group, that of true Fusinus being almost as little differentiated from typical Fasciolaria as the Australian species are, I am collecting information as to other species and hope to report in my next essay. I have also noted that there is a fossil Fasciolaria decipiens, a form not unlike bakeri, showing the plications very obscurely, so much so that the specimens here have been more than once variously determined.

My friend, Mr. J. R. Le B. Tomlin, has drawn my attention to a monograph of the genus *Fasciolaria* by Strebel in Jahrb. Hamburg Wissensch. Anstalten, xxviii., 1910, 2 Beiheft, (1911), pp. 1-58, Pls. i.-xv. Although Strebel apparently collected all the specimens he could find, there is nothing like the so-called *bakeri* in his series, nor does he figure a shell like the Port Fairy *australasia*.

Mr. Hedley has told me that apparently many of Perry's Australian shells came from Patterson (hence *Voluta pattersonia*), and that Patterson once lived at Dahrymple in northern Tasmania. This locality would agree with Perry's *australasia* and also his *Pyrula undulata* (see *post*, 891 A), as I find that the

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Port Fairy shore shells are practically inseparable from King Island and northern Tasmanian shore shells.

South Australian shore shells of *coronata* are not exactly like the Tasmanian forms, and are unlike the smooth Port Fairy *australasia*.

(888) VERCONELLA MAXIMA (Tryon, 1881).

A fine series of this lovely shell from Twofold Bay and off Green Cape, N.S.W., showed it to be the Australian representative of the Neozelanic dilatata, and consequently suggested the invalidity of the record of maxima from New Zealand. I investigated this matter as far as the material here available permitted, and then Hedley recorded results from recognition of the same facts in New Zealand. In the N.Z. Journ. Sci. and Techn., iii., Feb., 1920, p. 54, he stated that Suter's maxima was the true dilatata, and that the species Suter had described under the name dilatata should be called adusta Philippi (Abbil. Beschr., ii., 1845, p. 21, Pl. ii., fig. 7). On p. 170 (Sept., 1920), he gave photographs of the species, but, unfortunately, the names in connection were transposed, but the correction was made on p. 222. The series here had previously enabled me to recognise the true *dilatata*, but I had concluded that the false dilatata was merely a shallower water form of the same species, being not so acutely angled, with a shorter spire and shorter canal. Verco has synonymised with dilatata, tasmaniensis Adams and Angas, maxima Tryon, and oligostira Tate. Hedley, in the note quoted, stated that *dilatata* did not extend to South Australia, the species there being oligostira Tate.

Two entirely different molluses appear to be here confused as Tate's *oligostira* is not angled like *dilatata* and *maxima*, yet Vereo has recorded, under the name *dilatata*, from the Great Australian Bight, specimens "with marked angulation, valid sharp transverse coronating tubercles" which suggests to me a form of *maxima*. The series of *maxima* I have studied vary in size from 20 mm. to 250 mm., and came from depths varying from 15 to 70 fathoms, yet all are quite constant.

Hedley inadvertently placed *Verconella* in the family Fasciolariidae, as the radula and animal characters separate it quite widely from the Fusinoid series.

(889) FUSINUS NOVAEHOLLANDIAE (Reeve, 1848). (Plate xxxiv., f. 9.)

Two very large specimens trawled in about 50 fathoms off Green Cape were typical, save that the inner lip was enamelled into a distinct ridge separated from the body-whorl and showing a small but distinct posterior canal. Both measured 225 mm. in length (one was broader, and the apex and canal were both slightly broken), and dead, so that alive it must have been larger. On the last three whorls of both the longitudinals were very weak, almost missing, and the whorls were all regularly rounded.

Many specimens were found with the animal in, on the shore at Disaster Bay, recently washed up, and many were dredged up to 20 fathoms in both this and Twofold Bay. The largest of these shallow water shells measured 180 mm. in length and none had the inner lip thickened, but the larger ones showed the thickening beginning anteriorly. This series showed variation in the longitudinals, some having these well marked almost throughout, others practically showing none throughout, but every one had regularly rounded whorls.

This suggests the reconsideration of Verco's record of this species from the

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Great Australian Bight, as he states of his example: "67 mm. long shoulder is median and sharply angled with nine pliciform axial ribs."

Mr. Hedley has suggested that the large deepwater shells deserve a varietal name, and from examination of the series in the Australian Museum, which all agree with my specimens, I propose to name this *Colus novaehollandiae grandiculus*, n. subsp.

The generic name *Colus* was published by Humphrey (Museum Calonnianum, 1797, p. 34), the Linnean *Murex colus* being the type by tautonymy.

The legitimacy of Humphrey's names cannot be denied, by whatever rules we abide, as they are published as genera by a binomial author with a bibliographical reference. Anonymity is no bar to usage, and Humphrey's names were used for many years until quite recently.

(891) FUSINUS WAITEI (Hedley, 1903).

A single specimen was forwarded from 50-70 fathoms off Green Cape, N.S.W., but it was obviously not a Fusinus, as it was accompanied by typical Fusinoid shells, determined as F. novaehollandiae Reeve, and showed more relationship with Verconella maxima (Tryon), but still representing quite a distinct group. As, at the same time as he proposed this as a species of Fusus, Hedley discussed Verconella under a different generic name, I can see little objection to my introducing the new generic name Berylsma, with Hedley's species Fusus waitei as type. My specimen contained a hermit crab, but Mr. J. R. Le B. Tomlin has showed me a smaller specimen from Bass Straits (off Victoria), named F. waitei. It shows the operculum, which agrees with that of Verconella, and differs from that of Fusinus, and apparently was dredged in fairly deep water, as it is rather thin and pure white, covered with a thin silky periostracum, and bolder sculpture than my shell. I have concluded, from prolonged study, that this is merely a deeper water representative of the shell described by Adams and Angas as Fusus tasmaniensis (Proc. Zool. Soc. Lond., 1863 (1864), p. 424, Pl. xxxvii., fig. 1) from Tasmania. The type is in the British Museum and agrees very closely with Hedley's species, save that it is shorter in the spire and has a shorter canal. Alongside were placed specimens which seemed conspecific, but which were labelled "grandis Gray" and "Tasmania." This meant they were from unknown locality, but had been determined by Smith from comparison as grandis Gray, and that he had seen specimens from Tasmania. I was fortunate in tracing the Tasmanian shell sent by Roland Gunn, and still more so in finding, in a drawer of duplicates, a shell with a paper inside stating "This is the type of Fusus grandis Gray" in Smith's handwriting. Inside the mouth of the shell in Gray's handwriting is the identification "F. grandis Gray Coll." The photograph, natural size, I had at once taken shows that this species is certainly tasmaniensis and differs from waitei only in the shorter spire and canal. Otherwise the photo of grandis (Plate xxxv., f. 10) agrees in detail with my specimen of *waitei* as to breadth and ornamentation. Fusus grandis was described by Gray (Zool. Beechey's Voyage, (after June), 1839, p. 116) from unknown locality, and does not seem to have been used since, save in the cases in the British Museum.

I find that Mr. Hedley has recognised the affinity of his species with the Verconellids, beautiful specimens recently acquired being labelled in the Australian Museum, *Verconella waitei*. The specimens from deeper water, say 70 fathoms, agree with the type, which was secured at a depth of 79-80 fathoms,

while shells from less depths, say 40-50 fathoms, agree better with my shell, that is, they are broader, with a slightly shorter spire and canal, more solid, sculpture less pronounced and are tinged with colour of a yellowish tone. These are quite comparable with both *grandis* and *waitei*, and strongly support my conclusions recorded above.

(891 A) PROPEFUSUS PYRULATUS (Reeve, 1847).

When Hedley reviewed Perry's Conchology (These Proc., 1902, p. 24 et seq.) he recorded (p. 27) "Pyrula undulatus, Perry (Pl. liv., f. 1), is Fusus pyrulatus, Reeve, 1847."

Pritchard and Gatliff, under the latter name, had lumped Fusus ustulatus Reeve, writing "Making the same variation allowances as have been found necessary in the case of many of our other species, we find that we cannot do otherwise than regard F. ustulatus, Reeve, as but a variation of F. pyrulatus, Reeve, and F. legrandi, T. Woods, must also be included in the synonymy."

Verco had previously recorded F. pyrulatus Reeve as dredged in about 15 fathoms in South Australian waters, and F. ustulatus Reeve as from three beaches and also dredged, small, in 19-24 fathoms. Tate and May later recorded F. pyrulatus Reeve from Circular Head, common, and F. ustulatus Reeve, of which they regarded F. legrandi Ten.-Woods as a synonym, from N. Coast and E. Coast of Tasmania. Pritchard and Gatliff admitted Hedley's recognition of Perry's name. Hedley does not quote either from Western Australia, nor have I seen it recorded from New South Wales.

Shore shells sent by Roy Bell from Port Fairy, Vic., were determined as F. ustulatus Reeve from the type specimens, but these appeared distinct from F. pyrulatus Reeve, as shown by the types. Later, Bell dredged specimens from 10-20 fathoms in Disaster Bay, N.S.W., and later some young ones in Twofold Bay, about the latter depth. These obviously differed from the Port Fairy ones, and agreed with the types of pyrulatus Reeve. I then referred to Perry's Conchology, and found that his Pyrula undulata (Pl. liv., No. 1) was exactly like the Port Fairy shells, and was not the New South Wales form. The differences in the types and in my shells are clear, the dredged shell being larger and thinner and having a longer bent canal. The radula has been recorded as Fusoid, so I propose for the species Fusus pyrulatus Reeve, the new generic name Prope-fusus, as the shell-characters are unlike those of the true Fusus, i.e., Fusinus = Colus.

(904) MICROVOLUTA AUSTRALIS Angas, 1877.

A common shell in shallow water dredgings appeared in two colour variations, one dark red-brown monochrome, the other pale fawn with brown zigzag streaks. A third distinct form had a longer spire and stronger sculpture, though similarly coloured to the latter. This was dredged in the deeper shallow water of Twofold Bay, say from 15-25 fathoms, and dead shells in the 50-70 fathoms, off Green Cape.

Hedley and May (Rec. Austr. Mus., vii., 11 Sep., 1908, p. 120, Pl. xxiii., figs. 20, 21) named as a new species, from 100 fathoms, 7 miles east of Cape Pillar, Tasmania, *Microvoluta purpureostoma*, "Distinguished by lack of colour, feebler plaits, smaller size and less breadth. Two specimens, one $6 \ge 3$ mm., the other $8 \ge 3.5$ mm." They added "The characters seem to us to incline to the Mitridae rather than to the Volutidae." The majority of the monochrome specimens would answer to this as regards shape and size, etc., and probably the

Tasmanian specimens were dead and were pallid deeper water shells. From shell-characters, I agreed with Hedley's reference to the Mitridae, and could not understand the reference to the Volutidae. The only fear I had in connection with the new species I am describing, is, that it might have been described as a species of *Mitra*. As all the specimens of the common form were live shells, I handed some to my friend, Lt.-Col. Peile, for radular examination. There is no operculum, but the radula turns out to be typically Volutoid, practically a miniature of that of *Scaphella undulata*, which was examined at the same time.

Smith described a *Mitra miranda* (Proc. Zool. Soc. Lond., 1891) from Challenger Station 164 B, which, from the description and figure, is a *Microvoluta*, but is not my new species. I have examined the figures and descriptions of the Muddy Creek *Mitra*, but cannot recognise anything like this species, but some of these figures suggest *Microvoluta*, and actual comparison is necessary.

(904 A) MICROVOLUTA ROYANA, n.sp. (Plate xxxv., f. 13.)

A deeper water relation of M. australis, differing in the longer spire and complex sculpture.

Shell small, solid, shining, fusiform, spire a little attenuate, longer than aperture, outer lip sinuate, contracted anteriorly. Colour pale fawn with undulating zigzag streaks of pale red, and scattered darker red spots arranged linearly, and a paler zone marking the periphery. The apical whorls are unsculptured, one and a half in number, but can scarcely be said to be papillary, as in the type. The sculpture consists of curved, longitudinal, ill-defined ribs with shallow grooves between, about twenty-four on the penultimate whorl, and more on the last whorl, becoming obsolete and crowded towards the outer lip: they are less clearly differentiated on the earlier whorls, only showing as impressed lines on first whorl succeeding apical one and a half. All the whorls are completely crossed by thin incising lines almost as irregularly spaced as the longitudinals, about seven on penultimate whorl, those succeeding suture closer together, more separated towards base, about twenty-four lines on last whorl. There are about six and a half sculptured whorls, convex, with sutures distinct. Outer lip thin and sinuous, but solid, a shallow depression posteriorly, succeeded by a forward curve below the middle and sharply retracting anteriorly into a shallow spout. There are four well marked plications, regularly transverse, the first and third prominent, the second more so, and the fourth least and anteriorly sloping. Length of type 9.5 mm.; breadth 4 mm.; length of aperture 4.5 mm.

Dredged in the deeper water in Twofold Bay, N.S.W., 20-25 fathoms, and also in 50-70 fathoms off Green Cape, N.S.W.

Compared with numerous specimens of M. australis Angas from 5-15 fathoms in Twofold Bay, the coloration is similar, but the aperture in the type species is equal to the spire, which is a little compressed, the whorls less convex, sutures only impressed; the plications in the shallow water form are less marked, fourth obsolete, the outer lip almost straight, no posterior depression, and the anterior contraction not so pronounced. The genotype shows no sculpture, but really there is a couple of incised lines just below the suture, and in the earlier whorls faint indications of the lines longitudinally can be traced.

(904 B) PECULATOR VERCONIS, n. gen. et sp. (Plate xxxiv., f. 5.)

A close ally of *Imbricaria porphyria* Verco, and probably the Peronian representative of that species, differing in the higher spire and stronger sculpture. May (Illustr. Index Tasm. Shells, 1923, Pl. xxxvii., fig. 23), under Verco's name, has figured a species very similar to, if not the same as mine. Verco's detailed description agrees generally as regards shape and form. Shell ovate, spire short, aperture long and linear, more than twice the length of the spire. First two whorls smooth and rounded; rest sculptured with longitudinal ribs, of which twenty-three can be counted on the penultimate whorl, a transverse sculpture of elosely-packed incised lines being observed between the ribs; the same sculpture is seen on the last whorl, but the transverse sculpture becomes obsolete below the periphery, while the ribs also become weaker as they approach the anterior canal, where the transverse sculpture becomes more prominent again. Coloration pinkish-white with orange spots below the suture and below the periphery, the intervening space being marked with yellow arrow-head markings. Length 11 mm.; breadth 6 mm.

Dredged in Twofold Bay, 15-25 fathoms; and also in Disaster Bay, N.S.W., 10-20 F.

(910 A) RADULPHUS ROYANUS, n. gen. et sp. (Plate xxxiv., f. 8.)

Nearest Cyllene lactea Angas, but different at sight in sculpture and colour.

Shell small, buccinoid in shape, aperture about as long as spire, aperture oval, open, canal shallow, spire narrowly triangular. Coloration pinkish-fulvous, rather regularly spotted with white, the spots most noticeable on the last whorl. Apical whorls two, mamillate, smooth; adult whorls six, sculptured on the earlier whorls with longitudinal ribs, faintly at first, then strengthening to the antepenultimate whorl, where they decrease at the suture and develop into nodules peripherally; on the last whorl the sculpture appears to consist of a peripheral row of nodules extending a little anteriorly, succeeded by eight transverse lines; a shoulder shows only growth lines, but on the earlier whorls a few transverse lines may be observed. The inner lip is concave, appressed on the columella anteriorly and showing about eight transverse wrinkles; the outer lip is white, sharp edged but thickened interiorly, a few wrinkles anteriorly only, sinuate a little past the middle and advancing posteriorly. Operculum leaf-shaped. Length 15 mm.; breadth 7 mm.

Dredged in 15-25 fathoms in Twofold Bay, N.S.W., also in Disaster Bay, 10-20 fathoms.

(929) NASSARIUS SEMIGRANOSUS (Dunker, 1846).

Dunker described this under the genus *Buccinum*, and previously Wood (Index Testac., 1828, Suppl. p. 11) had proposed the same name, so that Dunker's name must be rejected. The next name seems to be *nigella* Reeve (accepted by Hedley for a variety). This species was common in the shallow water dredgings, varying appreciably, and the form named *munieriana* Crosse and Fischer was plentiful. This was ranked as a monstrosity by Hedley in his review of this species, but it seems to be a normal state, produced by growth after a long rest period.

The species does not seem distantly related to the Victorian shell I named *victorianus*, and I was inclined to refer some specimens to that species at first sight. Among the Muddy Creek fossils in the British Museum, I saw a series labelled *Nassa crassigranosa* Tate, which suggested themselves as ancestral relatives of both these recent species.

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(929 B) NASSARIUS TASMANICUS (Ten.-Woods, 1876).

According to Hedley's figure, and more recent autoptic examination of typical specimens, Tenison-Woods's Nassa tasmanica occurs. This was described (Proc. Roy. Soc. Tasm., 1875 (1876), p. 150) from the northern and eastern coasts of Tasmania, and was figured by Hedley (These Proc., xxxix., pt. 4, 1914 (26 Feb., 1915), p. 737, Pl. lxxxiv., f. 91). In the very shallow rock scoopings, many specimens were found from Twofold Bay, mixed with the preceding, but the latter was only dredged very commonly in depths from five fathoms down to the 50-70 fathom dredgings. In the latter a number of specimens was found, and as some were alive, nigella apparently lives down to that depth. The series showed that it was rapidly decreasing in size, the largest specimens being only equal to the average of the smaller of the shallow water series, being about half the size of the larger ones.

(935) PYRENE BEDDOMEI (Petterd, 1884).

This species was described as a *Terebra*, while it had been otherwise named *Columbella attenuata*. The attenuate form amply distinguishes the species from *Pyrene*, while the shape of the mouth is very different, the inner lip being crenulate and the outer lip sinuate; operculum irregularly oval, apex terminal, concentric striae fairly well marked. I propose the new generic name *Zella* for this species.

(971) CRASPEDOTRITON SPECIOSUS (Angas, 1871).

It seems correct to propose a new generic name, Galfridus, for this species, as it is obviously not congeneric with the type of Craspedotriton, Triton convolutus Broderip, when a careful examination of the shells is made. The latter has a long spire, which is commonly decollate, and a closed canal, and the resemblance is quite superficial. Moreover, we have knowledge of the radula and opercular features of the Australian shell, while we do not yet know details of Craspedotriton. The operculum and radula of speciosus Angas were figured by Kesteven (These Proc., 1902, p. 479, fig. 3 in text). Further, prior to Dall's proposal of Craspedotriton, Canefri had introduced (Ann. Soc. Malac. Belg., xv., 1880 (1881), p. 44) the name Phyllocoma for convolutus alone. This is antedated by Phyllocomus, proposed by Grube in 1877, and, according to our usage, invalid, but Bartsch, e.g., might not at present accept our views.

(974) LATAXIENA IMBRICATA (Smith, 1876).

Smith called this species *Fusus imbricatus*, and an earlier Smith had used the same name (Geol. Trans., vi., 1841, p. 156) for a different fossil. Apparently the unlovely name, *Lataxiena lataxiena* Jousseaume, 1883, must be used.

(975) TYPHIS PHILIPPENSIS Watson, 1886. (Plate xxxiv., fig. 10.)

This species was dredged as a very fine form in all depths from 15-25 fathoms in Twofold Bay, Disaster Bay and off Merimbula, N.S.W. It was described from Port Phillip, Vic., and Pritchard and Gatliff record, from that locality also, *yatesi* Crosse. From specimens in the British Museum sent by Verco, I conclude that the latter is the Adelaidean representative of the Peronian *philippensis*, and, if both should occur, it would be most interesting, but I think it will be found that only one species lives there. The operculum and radula are normal.

In the Rev. Mag. Zool., 1879, Jousseaume published a division of the Muri-

cidae, and I recorded the names (Trans. N.Z. Inst., xlvii., 1914 (12 July, 1915), p. 469), but only those of *Murex* sensu latissimo, and not those of *Typhis*. I here give the latter, and make correction as follows: The number of the Rev. Mag. Zool., 1879, did not appear until 1882, so Jousseaume published a digest in Le Naturaliste, 2nd Yr., No. 42, 15 Dec., 1880, simply giving the names of the divisions and designating a type. As a coincidence leading to confusion, the pagination in Le Naturaliste is 335-6, while in the Rev. Mag. Zool., 1879, the pages number from 322 to 339. The Muricoid names in Le Naturaliste all appear on p. 335, as they are given in my paper quoted, with the same types, but two names are mis-spelled, *Gracilipurpura* and *Pterochilus*.

The names relating to the subdivision of Typhis read in Le Naturaliste as follows:

).	335	Typhis Montfort.	Type Murex tubifer Brug.	
		Typhinellus nov.	Typhis sowerbyi Brod.	
		Typhina nov.	belcheri Brod.	
		Siphonochelus nov.	avenatus Hinds.	
		Typhisopsis nov.	coronatus Brod.	
		Haustellotyphis nov.	cumingi Brod.	
	336	Perotyphis nov.	pinnatus Brod.	
		Lyrotyphis (ex Bayle MS.) nov	v. Typhis cuniculosus Düchstel (fossil)	
		Hirtotyphis (ex Bayle MS.) nov	v. horridus Brocchi (fossil)	

In the Rev. Mag. Zool., 1879, which appeared in 1882, I find p. 337 Cyphonochelus nov. Type Typhis arcuatus Hinds. 338 Pterotyphis nov. pinnatus Brod.

as corrections for Siphonochelus and Perotyphis.

Then are added p. 338 *Talityphis*

339 Trigonotyphis Typhisala Type Typhis expansus Sow. fimbriatus A. Ad. grandis A. Ad.

Examination of the series in the British Museum shows that the Australian philippensis is so like belcheri, i.e., cleryi, that the specific name has been used for it and is therefore referable to Typhina, but these are very close to the fossil, which is the type of Typhis. In the same way sowerbyi, grandis, fimbriatus, probably with *pinnatus* and *coronatus* (shown only by imperfect specimens) group together, though their distribution is eccentric. However, the generic distinction of the arcuatus group cannot be denied, and apparently Cyphonochelus must be used; the name Siphonochelus can only be construct as a nomen nudum as the type name was mis-spelled avenatus, and could not be recognised. The Muddy Creek fossil Typhis mccoyi Ten.-Woods seems to differ only by being larger than my series, while these are larger than the type. Verco has also recorded large specimens of *yatesi*, so that we have here an interesting series. A deepwater dead shell from 50-70 fathoms, off Green Cape, N.S.W. (it may have washed down) proved very close to the fossil form, as shown here by a smaller specimen than the type. Typhis hebetatus Hutton, a Neo-zelanic fossil, has even been regarded as synonymous with T. mccoyi, but this determination should be re-investigated.

I here name the large form I have figured (Plate xxxiv., f. 10) Typhis philippensis interpres, n. subsp., though it might as well be named Typhis [mccoyi] interpres, either nomination suggesting its relationship.

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(976) TYPHIS SYRINGIANUS Hedley, 1903.

The generic name *Cyphonochelus* should be used for this species, as cited in the preceding note: This beautiful little shell was dredged alive in small numbers in the shallower waters of Twofold Bay, from 6 to 12 fathoms, and achieved a length of 11 mm., and is of a red-brown colour when alive, sometimes with a paler zone circling the body-whorl. The operculum and radula are normal. Dead specimens from 50-70 fathoms off Green Cape are smaller.

(978) XYMENE HANLEYI (Angas, 1867).

This species ranges into Victoria, having been sent from Mallacoota by Roy Bell. It is not uncommon in the shallow water dredgings from Twofold Bay, and is always easily separable from *paivae*, with which it was confused until Hedley separated them comparatively recently. The Mallacoota shells are sometimes broader, but from Port Fairy, Vic., *paivae* was sent as a shore shell, and with it an elate similar-looking shell which was quite distinct, and may be one of the named forms commonly ranked as synonyms, such as *assisi* Ten.-Woods.

The genus Xymene cannot include these Muricoid forms, so I again propose a new genus, Bedeva, and name Angas's Trophon hanleyi as type.

I note that the dredged Twofold Bay shells have a longer, more recurved canal than the more littoral ones from Mallacoota, and this suggests that *paivae* is only the Adelaidean shore representative of the shallow water Peronian *hanleyi*, while *assisi* is the shallow water Adelaidean form. A pretty problem is here revealed.

(980) THAIS SUCCINCTA (Martyn, 1784).

Some of the commonest species of marine molluses give the most trouble. For a century the question of the variability of the present species has been discussed, and the matter to-day cannot be regarded as definitely settled. Recently, Australian malacologists have accepted the specific identity of the two forms commonly known as succincta and textiliosa. I have collated the following expressions of published opinion in the known range of southern extra-tropical Australia and New Zealand. Tate and May included P. succincta and var. textiliosa without comment: years later, when May recorded Thais succincta Mart. from the Furneaux Group he noted "A smoothish form was seen." Pritchard and Gatliff wrote "There seems to be no doubt whatever, that P. succincta and P. textiliosa are but variations of the one species. The nature of their habitat probably controlling their variations to a great extent. The finer ornamented form is the commoner with us." Years ago, Verco wrote "the form having strong revolving ribs with excavated sides, is very rare on the South Australian coast. P. textiliosa Lam. is only a variety of P. succincta, and this is a very common shell here. From a large number of specimens we have been able to obtain complete series of gradations between P. succincta and P. textiliosa, and between P. textiliosa and P. aegrota, proving them all to be but variations of a common species."

At Sunday Island in the Kermadee Group, this form was probably living, but was only met with as a huge dead shell, which has since been considered as a distinct species. In New Zealand, both forms appear to live in the North Island and Suter states that the smoother form is the more common, with the suggestion that the differences are due to habitat. At Caloundra, Queensland, I collected a series which showed both forms, under the same conditions, and the succincta form was constantly a thinner shell with the outer lip thin, the texti*liosa* form being much heavier and thicker and having a thickened lip, lirate within. Roy Bell sent me, from Norfolk Island, a long series from the same reef showing similar differences, and, moreover, very constantly so. Dr. A. H. Cooke got together a large series of shells from Australia, confirming Verco's suggestion, but emphasized the fact that the *succincta* form was the preponderating eastern Australian shell, the *textiliosa* the South Australian and the *aegrota* form Western Australian. He showed these at a meeting of the Malacological Society of London, when I confronted them with the above-mentioned facts and specimens, and he allowed that these created a difficulty. I suggested that only two solutions seemed possible, sexual dimorphism, or that there were two distinct species. He then studied the radulae of the whole of the species referred to *Thais* and published his results (Proc. Malac. Soc. Lond., xiii, Apr., 1919, pp. 91-109) wherein he showed that two types of radula were seen in the Gwatkin collection under the name of *textiliosa* and *succincta*, and that these suggested two species.

Roy Bell sent a nice series from Port Fairy, Vic., which were at once recognised as distinct from the Caloundra shells, as they were all smoothish texti*liosa*, but with lower spires and indistinct noduling at the shoulders, recalling adgrota. I have noted such a specimen in the British Museum, labelled ventricosa Tate. From Mallacoota, a good lot was sent, but these were nearly all typical succincta, a couple of odd shells like the Port Fairy series standing out at once. From Twofold Bay, a long selection was forwarded, every one of which was typical succincta. I then examined the radulae in the Gwatkin collection, and found that all those referred to as textiliosa were from Western Australia and Victoria, while the *succincta* specimens were from New South Wales. From this it is seen that the exact status of the New South Wales textiliosa is still undetermined, but that *aegrota* and its var. *ventricosa* are readily separable, either by shell characters or by radular features. I have studied this species on the Sydney beaches, with the result that, so far, all the specimens are easily referable to succincta alone, no textiliosa occurring, any apparently smoothish shell being traceable to fracture. From southern Tasmania, a series has been examined, all being textiliosa, and suggesting that the type of Lamarck's textiliosa may have been collected in that locality. The Port Fairy shells, which should geographically agree with Kangaroo Island ones, are not so well in agreement with the Lamarckian figure.

The New Zealand shells, regarded as *succincta*, are easily separable, and should bear the name *scalaris* Menke (Verz. Conch. Samml. Mals., 1829, p. 33), unless that name be preoccupied, which I have not yet determined. Since I recognised this fact and name, I find that Mr. Hedley had named the specimens in the Study Collection in the Australian Museum, selecting Menke's choice, as of varietal rank, so that the radula should be examined comparatively.

(981) AGNEWIA PSEUDAMYGDALA (Hedley, 1903).

The reference of this species to Agnewia is a pure error, as Cronia had been introduced earlier by H. and A. Adams (Gen. Recent Moll., Vol. i., Aug., 1853, p. 128) for amygdala Kiener alone. The shell from the eastern coast of Australia was separated as a distinct species from amygdala Kiener, from Western Australia, under the name pseudamygdala by Hedley. When I collected the shell known as Drupa chaidea Duclos at the Kermadec Islands, its close resemblance to the Australian shell impressed me, and I worked out the affinities of these shells from conchological characters, and accepted Morula for the chaidea series. Cooke investigated the radula of these groups and published his conclusions (Proc. Malac. Soc. Lond., xiii., Apl., 1919, p. 91 et seq). Some of his statements are not exactly well-written, as in this case, dealing with the radula of the present species, he writes under the name "Cronia amygdalus, Kien.: Torres Str., Port Jackson. . . . Mr. Hedley, I am told by Mr. Iredale, names Cronia from these localities pseudamygdalus, restricting amygdalus to Sydney and the east coast." This last sentence is ridiculous.

However, Cooke pointed out that the radula was "markedly that of Morula. Cronia is a scarcely modified Morula," thus absolutely confirming my conclusions achieved from conchological studies. In the same place, Cooke figured the radula of Agnewia tritoniformis (Blainville), which is of an entirely different pattern, being very close to that of the succincta series, for which I proposed the genus Neothais. Cooke further showed that the peculiar radular characters of Lepsiella were to be seen in the Australian species I ranged therein from shell features.

As noted above, I studied this group so may here note that the shell named by Hedley *Thais ambustulata* was collected by myself at Caloundra, Queensland, and seems to be closely allied to *margariticola* Broderip, a widespread tropical *Morula* of Muricoid facies.

In this family I suggest a renomination thus:

No

).	979 Thais ambustulata	to be	Morula ambustulata
	980 succincta		Neothais succincta
	981 Agnewia pseudamygdala		Cronia pseudamygdala
	988 Drupa chaidea		Morula nodulifera
	989 marainalha		Morula marginalha

In the Proc. Malac. Soc. Lond., xiii., 1918, pp. 38-39, I noted that Duclos' *P. chaidea* was regarded by Martens, from study of the type, as identical with *P. nodulifera* Menke. This was briefly described (Verz. Conch. Samml. Malsburg, p. 33 (pref. May 18) 1829) without definite locality, but as the species is unmistakable, Menke's name may be accepted. At the same time, I recorded that *Purpura granulata* Duclos (Ann. Sci. Nat. Paris, xxvi., May, 1832) was equivalent to and earlier than *P. tuberculata* Blainville (after June, 1832), and this chronological item was overlooked by Hedley (These Proc., xlviii., 3 Oct., 1923, p. 314) when he gave a definite Australian locality for *Drupa tuberculata*, recte *Morula granulata* Duclos, a common shell at Lord Howe and Norfolk Islands, whence Bell sent it.

(1000) SIPHONARIA VIRGULATA Hedley, 1915.

Hedley described this species from Terrigal, Sydney, and Twofold Bay, citing as equivalent Siphonaria funiculata Angas, not Reeve. His type measurements read: Length 21; breadth 19; height 9 mm. His comparison with funiculata reads "the Tasmanian species differs in being more solid, narrower, taller, with sharper contrast between light and dark stripes, and fewer coarser radials." He regarded blainvillei Hanley as an clevated form of S. virgulata. I have repeatedly criticised the British Museum types named, and agree in the above differential features, and have concluded that virgulata is simply the Peronian form of funiculata Reeve. Shells from Long Reef, Sydney, sent by Hedley as "Co-types" are seaworn and apparently smoother than shells from Vietoria labelled "inculta Gould," which, of course, they are not. A very fine lot from Twofold Bay, sent by Roy Bell, are all very clean beautiful shells and agree generally with the description given by Hedley, and are undoubtedly his species.

From Mallacoota and Lakes Entrance, Vic., Bell had previously sent the

same species in the same clean condition, but a slightly rougher form. From the latter place, three large beautiful shells were sent, narrower and taller, and proving the exact relationship of *virgulata* and *funiculata*, as they agreed exactly with the types of the latter species save in solidity and less coarse radials.

Hedley, however, also wrote "Nearer to our novelty than funiculata is S. zonata Ten.-Woods (Proc. Roy. Soc. Tasm., 1877 (1879), pp. 47, 99), which is taller, narrower, darker in colour, more coarsely and evenly sculptured, and ranging from Tasmania to Victoria, and South Australia, being the Adelaidean correspondent of the Peronian virgulata." This statement has continually puzzled me, as from Port Fairy, Vic., Roy Bell had sent a beautiful series of probably the most pleasing Siphonaria I have seen. This was named in the British Museum Collection "zonata Ten.-Woods," and I found, at the reference above cited, that Tenison-Woods had previously described the shell as Siphonaria denticula var. tasmanica. This was pointed out by Hardy (Papers and Proc. Roy. Soc. Tasm., 1915, p. 62) in a paper I did not see until after I had traced this myself. Tenison-Woods described his species as "with 40 to 50 fine flattened and diminishing ribs," which agrees with Hedley's "sculpture," but the Port Fairy shells do not show "coarse" sculpture, being comparatively the "smoothest" form of Siphonaria, while the Lakes Entrance shell is even smoother. The name of the species known as Siphonaria zonata must become Siphonaria tasmanica, both of Tenison-Woods, an item overlooked by May (Cheek List; and also Illustr. Index Tasmanian Shells).

(1001) SIPHONARIA ZEPRA Reeve, 1856.

Hedley has admitted this name, apparently on account of the recognition of shells, apparently types, so named in the British Museum. These were localised as from "Port Jackson" and placed next to a set of "bifurcata Reeve," also apparently types, and also with locality "Port Jackson." As Reeve's species zebra was described from the Philippine Islands, I examined these in connection with the description and figure. Only a figure of the inside was given, and the description of *zebra* states "depressly conical . . . white with one or two blotches," whilst of bifurcata was written "very depressly conical . . . yellowish white, interstices between the ribs rayed with black." The latter account agrees with the shells labelled *zebra*, while the set labelled *bifurcata* disagree entirely, as their outer surface is nearly unicoloured white, and they are comparatively very tall. I did not recognise them as the types of *zebra*, which I did not absolutely find. It will be noted that the figures have the numbers transposed, or it may even be that it was the descriptions which were mixed up. However, though it is certain that the two shells have been confused, I cannot recognise in anything I have seen, such a shell as Hedley might have determined as bifurcata. The real bifurcata (i.e., zebra Hedley), I conclude, is the Peronian representative of the Western Australian baconi.

(1002) KERGUELENIA STOWAE (Verco, 1906).

Many dead shells occurred in shell-sand sent me by Dr. Torr from South Australia, and the shells I sorted out of the shell-sand and shallow water dredgings from Twofold Bay, N.S.W., showed appreciable differences. The latter were more regularly elongate and smooth, and with the apex more anterior. I find these to be common and constant on the Sydney beaches, and I separate them subspecifically, but the genus *Kerguelenia* should first be rejected. The radula is very different, consisting of 120 rows with a formula of 44.1.44 in the case of

Kerquelenia lateralis from New Zealand, i.e., K. innominata Iredale; in S. stowae Verco, the rows are given as 94 with a formula of 22.1.22, a very different style. I introduce the new generic name Pugillaria for S. stowae Verco, and name the Peronian form Pugillaria stowae comita, n. subsp.

(1003) GADINIA CONICA Angas, 1867.

Some years ago, discussing the occurrence of a Gadinia at the Kermadees, from a study of shell characters, I was compelled to lump all the Neozelanic and Austral forms into one species. Lumping is notoriously a bad policy, and in the few instances I have hitherto adopted such I have later been forced to alter my conclusions and this case points a special moral. Dr. Torr sent me some shell-sand from Port Lincoln, S. Aust., and from it I sorted some young dead shells of a Gadinia: these attracted me by their regular elongate shell, the shells I had previously studied being more or less circular with only slight eccentricity. I, therefore, reviewed the matter and concluded that the only way to criticise these molluscs was geographically, and, therefore, I contrasted my own series collected at Sydney, with the South Australian shells, and found them abundantly distinct, the former always being more rounded and flatter. Knowing the individual variation well, I was still certain that these were separable. Contrasting the former with Neozelanic specimens, the differences were not so striking, but still there were some. Recourse to the radular features showed great distinction: thus, Claude Torr counted thirty laterals in connection with that of the South Australian form, while Hutton found sixty in the New Zealand form. The radula in the Gwatkin Collection from Port Jackson shows about forty, but as I collected the Sydney shell alive myself, I am having some more preparations made, and will refer again. The anatomy of the Neozelanic species was dealt with by Hutton (Trans. N.Z. Inst., xv., 1882 (1883), 144).

Siphonaria albida Angas (Proc. Zool. Soc. Lond., 1878, p. 314, Pl. xviii., figs. 14, 15), described from St. Vincent's Gulf, S. Aust., is undoubtedly only a fine clean regular Gadinia; no such shape would be found in New South Wales.

(1123 A) PHILINE COLUMNARIA Hedley and May, 1908.

Philine columnaria Hedley and May, Rec. Austr. Mus. vii., No. 2, 11 Sep., 1908, p. 123, Pl. xxiv., figs. 25, 26: 100 fathoms, off Cape Pillar, Tasmania.

Specimens agreeing well with the description and figure of this species were found in the 50-70 fathom dredgings off Green Cape, N.S.W., and this species may be added to the N.S.W. List.

EXPLANATION OF PLATES XXXIII.-XXXVI.

Plate xxxiii.

1. Neotrigonia gemma Iredale, Type.

N. margaritacea (Lamarck), juv.
4. Myadora subalbida Gatliff and Gabriel.
Ieft valve; 4. right valve.

5, 6. M. royana Iredale, Type. 5. left valve; 6. right valve.

7, 8. Fluctiger royanus Iredale, Type. 7. right valve; 8. left valve.

9, 10. Myadora complexa Iredale, Type. 9. right valve; 10. left valve.

11, 12. Bathycardita raouli Angas. 11. adult; 12. interior view.

13, 14. Myadora albida Ten.-Woods. 13. left valve; 14. right valve.

15. Solamen rex Iredale, Type.

Plate xxxiv.

- 1-4. Lima nimbifer Iredale. 1. narrowed right valve, inside; 2. Type, side view; 3. full left valve, interior; 4. Type, outside of left valve.
- 5. Peculator verconis Iredale, Type.
- 6, 7. Teleochilus royanus Iredale, Type. 7. protoconch.
- 8. Radulphus royanus Iredale, Type.
- 9. Colus novaehollandiae grandiculus Iredale, protoconch.
- 10. Typhis philippensis interpres Iredale, Type.
- 11. Stiva royana Iredale, Type.

Plate xxxv.

1. Neotrigonia gemma Iredale.

- 2. Solamen rex Iredale.
- 3. Glycymeris striatularis suspectus Iredale, Type.
- 4. Austrotriton parkinsonius basilicus Iredale, Type.
- 5, 6. Eligidion audax Iredale, Type. 5. side view; 6. from above.
- 7-9. Ethminolia probabilis Iredale, Type. 7. from above; 8. from side; 9. from below.
- 10. Fusus grandis Gray, Type.
- 11. Spectamen philippensis Watson.
- 12. Minolia pulcherrima emendata Iredale, Type.
- 13. Microvoluta royana Iredale, Type.
- 14. Nuculana dohrnii (Hanley).
- 15. Nuculana (dohrnii) tragulata Iredale.
- 16, 17. Triviella merces Iredale, Type. 16. from above; 17. from below.
- 18, 19. Glycymeris flammeus Reeve. 18. hinge; 19. hinge of young.
- 20. G. hedleyi Lamy.
- 21. Amygdalum beddomei Iredale, Type.

Plate xxxvi.

- 1, 17. Leiopyrga lineolaris Gould. 1. variation; 17. normal.
- 2. L. octona problematica Iredale, Type.
- 3, 12, 13. Gazameda gunnii Reeve. 3. Disaster Bay form; 12. normal; 13. from deepwater.

4, 15. Colpospira guilleaumei Iredale, Type. 15. side view of mouth showing sinus.

- 5. C. quadrata Donald.
- 6, 7. Terebra brazieri Angas. 6. sculptured form; 7. smooth form.
- 8. Baryspira oblonga Sowerby.
- 9. B. fusiformis gaza Iredale. Type from off Merimbula.
- 10. B. fusiformis Petterd.
- 11. Gazameda tasmanica Reeve, adult.
- 14. G. tasmanica Reeve, young.
- 16. Pervicacia assecla Iredale, Type.

Note added 16 Sept., 1924.—I find that some years ago Cossman designated Ancilla australis Sowerby as the type of Baryspira. This should be noted in 5th line from bottom of page 259 and also line 6 on page 260.